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EDITORIAL

THIS, the first number of a new series, appears on the 88th anniversary of the inception of the DUBLIN JOURNAL OF MEDICAL SCIENCE. Founded in 1832 by Robert Kane, it was co-edited by Graves and Stokes; and Kane, three years later, in a letter resigning his important trust, could claim that he had seen the Journal "after but a brief adolescence" take a place, creditable to his country, among the medical periodicals of Europe.

The title page of these old numbers bore the impress of a true scientific attitude, setting forth an intention of "exhibiting a comprehensive view of the latest discoveries in Medicine, Surgrey and the collateral sciences." It is our purpose to endeavour to maintain this fine tradition, and to devote an important part of the Journal to an epitome of what is noteworthy in current medical literature. We begin with an abstract of recent surgical contributions; the other departments of medical science will be dealt with in rotation.

In the present issue we have ventured to emphasise the fact that the Journal has now become the organ of the Royal Academy of Medicine in Ireland, by publishing papers read lately before sections of the Academy. Future issues will embrace articles from any source that bear the *imprimatur* of excellence and originality.

It is impossible to close this prefatory note without reference to Sir John William Moore. The achievement of editing the Journal for forty-seven years is its own impressive eulogy. It is no slight privilege to continue a task that for nearly half a century has been a labour of love.

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ORIGINAL COMMUNICATIONS

A SHORT ACCOUNT OF DYSENTERY IN DUBLIN IN THE AUTUMN OF 1919.

By ADRIAN STOKES and J. W. BIGGER.

[Read in the Section of Pathology, 9th January, 1920.]

Towards the end of August, 1919, we became aware that there was a considerable amount of severe diarrhœa, with some fatal cases, in the district which lay between Sir Patrick's Dun's Hospital and the River Liffey. This epidemic seemed worth investigating, and we arranged to procure specimens of the dejecta from some typical cases which were at that time being admitted to Sir Patrick Dun's Hospital. We were able to prove that the *B. dysenteriæ* of Shiga was present in nine of the first eleven specimens examined. The Public Health Authorities then took the matter in hand, and it was arranged that specimens should be sent for examination from all the suspicious cases. It was further arranged that cases should be admitted to Sir Patrick Dun's Hospital and Cork Street Fever Hospital. Specific anti-dysentery serum was provided by the city authorities for the treatment of the cases.

Technique of Isolation and Identification.—Specimens were sent to the laboratory in the ordinary tubes provided for the purpose. We insisted that all specimens should be sent to the laboratory at the earliest possible moment after their collection, and that care should be exercised in selecting suitable material—blood-stained mucus, pus and mucus being the most favourable specimens for examination. On arrival, particles of blood-stained mucus

were carefully washed in two successive tubes of sterile salt solution, and a small fragment was spread on the medium in use. The first hundred specimens were plated in duplicate on MacConkey's and Endo's media. As there was no difference in the number of isolations of the pathogenic organism, the former was selected for use during the rest of the epidemic. The plates were incubated for 18 to 20 hours, and were then examined, suspicious colonies being picked off into undiluted Shiga and Flexner agglutinating serum. This rough agglutination was used as a preliminary indication of which colonies should be chosen for further investigation. Colonies giving an agglutination in 15 seconds were subcultured into lactose peptone water and incubated for 10 to 24 hours. The culture so obtained was used for agglutination at the full titre of the serum (1 - 1000) and for distribution into tubes of glucose, mannite, saccharose, maltose, peptone water, and agar. In the majority of organisms isolated macroscopic agglutination was again done, the agar slope serving to furnish the emulsion.

The agglutination and sugar reactions being positive and the indol reaction being negative, the organism was regarded as a *B. Shiga*, and reported as such at the end of 48 hours.

Specimens sent for Examination :—

Patients examined	No. of specimens	*B. Shiga* isolated	Number of cases proved
168	354	101	76

Of the 168 individuals examined, there are 29 who can be excluded for some good reason as not having suffered from dysentery. This gives 76 cases proved out of 139, which is 54.6 per cent. This figure does not represent the true picture, as a considerable number of the specimens sent were not examined during the active stage of the disease, but were tested, prior to the discharge of the patient, when he was definitely convalescent.

Analysis of 77 specimens, showing the results according to the nature of the specimen sent :—

Description	Number	Percentage positive
Blood and mucus ...	30 ...	100
Mucus	10	40
Swab	13 ...	30
Fæces	24 ...	16

The results obtained from the examination of blood and mucus are extraordinarily high, and we will comment on this later in the paper.

Analysis of the results of examination of 149 specimens from 60 patients in Sir Patrick Dun's Hospital :—

	1st week	2nd week	3rd week	4th week
Number of specimens ...	72	41	18	18
Percentage positive ...	57%	24%	17%	17%

Twenty-nine cases from whom *B. Shiga* had been in their sera, and 8 normal sera were taken for controls. The agglutinations were done macroscopically, and incubated for 18 hours at 37° C. The emulsion was made in carbol saline from five strains which were isolated during the course of the epidemic. The suspension was standardised to contain 2,500 million bacilli to the c.c. We give here a short extract showing some characteristic examples of the reactions obtained in this epidemic.

Days Ill.—Serum diluted.	1–10	1–20	1–30	1–40	1–60	1–80	1–120
2	C	C	C	T	–	–	-
5	C	C	C	C	C	T	–
8	C	T	-	–	-	–	
18	C	C	C	C	C	C	
21	C	C	C	C	C	C	T
22	C	T	-				

Controls.

1	... ...	C	T
2	... ...	T	
3	... ...	T	
4	... ...	T	
5	... ...	T	
6	... ...	-	
7	... ...	-	
8	... ...	-	

C represents complete agglutination. T represents a trace

The agglutination in dysentery cases is notoriously irregular, and the above Table amply demonstrates this.

Morbid Anatomy.—We were only in a position to perform autopsies in three cases, in two of which the typical lesions of acute bacillary dysentery were found. The entire colon and the lower part of the ileum were in a state of acute inflammation; the colon showed thickening of the wall, a false membrane on the surface, and numerous ulcerated patches. Catarrhal inflammation of the glands, fibrinous œdema and cell infiltration of the submucous coat, with intense congestion of the vessels, and, in places, necrosis and sloughing of the mucous coat were seen in microscopic sections.

The third case in which an autopsy was performed was that of an elderly patient, who died as a result of a streptococcus septicæmia when convalescent from dysentery. The colon in this case showed unmistakeable signs of dysentery, but the ulcerative process had progressed to the stage of repair, the thickening of the intestine had disappeared, and there were signs of the regeneration of the mucus membrane; the macroscopic findings were confirmed microscopically.

Epidemiology.—The following Table shows the notifications and deaths during the epidemic:—

Months	Notified	Died
September ...	114	12
October ...	56	3
November ...	14	3
December ...	2	1
Total ...	186	19

It should be noted that 173 of the notification cases were from the city and 13 from the Pembroke Urban District. Of the city cases, 111 came from one dispensary district, No. 4 South; the number of cases notified from the north side of the river was very small. Although the notification of dysentery cases only commenced in the first week of September, there is good reason to believe that there were a small number of cases in August and probably a few in July.

Notifications and deaths by ages :—

Age		Notified	Died
0–5	...	23	2
5–15	...	49	2
15–25	...	38	1
25–35	...	25	0
35–45	...	21	1
45–55	...	15	6
55 upwards	...	15	7

The death-rate for all the cases notified was approximately 10 per cent. ; at ages up to 45 years it was 3.8 per cent. ; and from 45 upwards was 43.3 per cent.

As soon as the epidemic became known Dr. M. J. Russell, Assistant Medical Officer of Health, investigated the food and milk supply of the houses in which cases of dysentery had occurred, but was unable to find any common source from which the epidemic might have arisen.

The area from which most of the dysentery cases came is one in which the sanitary conditions leave much to be desired : tenement houses, overcrowding, and flies give ample scope for the spread of an epidemic.

Remarks.—From the historical point of view, we think that the epidemic is of some interest, as, so far as we have been able to ascertain, there has been no outbreak of dysentery in Dublin in modern times. There have been three small epidemics reported in England during the last few years, but in none of them were the cases so numerous as in Dublin. The fact that there were not many cases till the end of August had, we believe, a definite result in limiting the epidemic. The weather conditions in August were eminently favourable for the spread of the disease, whereas the cold and wet weather which prevailed during September was inimical.

It is worth noting that only one case of dysentery was proved to be caused by an organism of the Flexner group.

Another point on which we wish to comment was the comparative ease with which the organism was isolated. We have had considerable experience of dysentery epi-

demics, and were surprised at the facility with which we obtained cultures of the Shiga bacillus. From the specimens of blood-stained mucus sent for examination it was the rule to obtain pure, or almost pure, cultures, and the number of times we isolated the organism from such specimens was very high. We rarely obtained a specimen which was less than 4 hours old, but in spite of this we had little difficulty in isolating the organisms in fairly early cases.

We have an impression that the organism was not of a very virulent variety. Our reasons are—that of three strains that were inoculated alive into rabbits in considerable doses (2,000, 2,500, 5,000 millions) none produced any serious reaction. Further, the death-rate in the epidemic was, on the whole, low. As a final proof of the identity of the organism, the serum of a rabbit immunised with the Dublin strain was shown to agglutinate four strains (Lister Institute, R.A.M. College, Standards Lab. Oxford and Laboratory Strain) to the full titre of the serum.

We further wish to remark on the titre of agglutination obtained with the sera of patients. We believe that the strains which were used for preparing the suspensions were of relatively low agglutinability—possibly because they had only recently been isolated. In support of this we add a short Table.

Comparison of titre obtained in the agglutination of three sera with homologous strain and Oxford Standard strain. Emulsions of the same strength were used :—

Serum number	Agglutination end point.	
	Homologous strain	Oxford strain
17 ...	1–80	1–240
18 ...	1–40	1–80
21 ...	1 30	1–60

We wish to acknowledge our indebtedness to many practitioners, and especially to Dr. M. J Russell and to the Resident and Consulting Staffs of Sir Patrick Dun's Hospital and Cork Street Fever Hospital.

THE PROBLEM OF THE DUBLIN VOLUNTARY HOSPITALS.*

By ROBERT J. ROWLETTE, M.D., F.R.C.P.I.:

President of the Section of State Medicine, Royal Academy of Medicine in Ireland.

My first duty is to thank the Council of this Section for inviting me—an amateur in their specialty—to accept nomination to the chair of the Section, and the Fellows of the Academy for assenting to my election. Though ignorant of the technical side of public health work—I do not even possess a diploma on the subject—I hope that my interest in the health of the country is no less than that of those whose special work is to conserve that health, and I ask you to let my zeal make excuses for my lack of technical knowledge as your President.

It would be wrong to pass to the special subject of my address to-night without throwing a passing glance at certain happenings in the past twelve months which one hopes may bear rich fruit for our country in the future. A little over twelve months ago Mr. Thomas Hennessy read before this Section an illuminating paper on Medical Reform in Ireland. Arising out of the discussion thereon the Section passed a resolution requesting the General Council of the Academy to consider the matter and take such action as it thought fit. The General Council sought the aid of the Royal College of Physicians, which, in its turn, called to its counsels the other medical corporations and organizations in Ireland. As a result a deputation representing all the medical corporations and associations of the country had an interview with the Chief Secretary on the 26th March last. A case was made for the necessity of medical reform in Ireland, and a sketch was drawn of the lines such reform should, in the opinion of the deputation, follow. I believe I am right in saying that the arguments of the deputation had their influence in induc-

* The Presidential Address read before the Section of State Medicine, Royal Academy of Medicine in Ireland, on Friday, February 6th, 1920.

ing the Chief Secretary to add to the Ministry of Health Bill then before Parliament an empowering clause concerning Ireland. This clause not only constituted the Chief Secretary Minister of Health for Ireland, but also set up an Irish Public Health Council to advise him as to the exercise of his powers and duties under the Act. The Council is now, we understand, almost ready to submit its first report. It has announced many of its recommendations of which the most important so far is, perhaps, the advice to establish in lieu of the present poor law medical service of the country and the other public medical services a unified Irish medical service with entry by competitive examination, prospect of promotion, and pension rights. Such a service, if established and administered in generous mood, will be an untold boon to the whole country, and not merely to our profession. Judging from this example, we may be encouraged to hope that the Council in its advice to the Minister of Health will frame a scheme at once radical, far-reaching, and statesmanlike. If such reform should bear fruit, this Section will be able to congratulate itself that it had some share in the planting or nurture of the seed.

The problem of the maintenance and efficiency of the voluntary hospitals had attracted the attention of most of us for many years past, though not as forcibly as its importance demanded.

During the past two years, however, the condition of the hospitals is no longer merely precarious, but is critical, and at the several institutions in which we are interested we have all been engaged in considering not how the hospitals can be rendered efficient but how their very existence may be safeguarded. The problem is not merely medical; it is one of great importance to the welfare of the community. I hope that a free and untrammelled discussion in such a meeting as this—representative as it is of the professional workers of every class in the several hospitals of Dublin—may, if it does not enable us to see the entire stretch of the road we should take

at least help us to gain some knowledge of the country ahead.

The primary object of the voluntary hospitals is, no doubt, to furnish medical treatment and care to the sick poor who cannot provide these necessities for themselves. Other functions, at one time secondary, have now become equally essential. Of these the chief are the education of the medical student and the advancement of medical knowledge. Other institutions, such as the poor law hospitals, take part in the first of these functions, but have so far left the second and third undeveloped. It is of interest to note that within the past few weeks a new step has been taken in London by making the wards of the Paddington Infirmary available for the clinical instruction of the students of St. Mary's Hospital. In judging of the efficiency of a hospital it will be necessary to keep these three functions constantly in mind.

In Dublin we have a large number of small hospitals, and in consequence each member of the visiting staff deals with a small number of beds. The physician or surgeon has, therefore, a greater personal interest in each patient, and can concentrate on each a greater amount of personal attention than if he had, as in the large London hospitals, some fifty or sixty beds in his care. One may conclude, therefore, that from the point of view of the care of the patient the Dublin system has certain great advantages. On the other hand, in a small hospital the physician or surgeon is necessarily left without much of the auxiliary service which can only be provided in a larger institution. The most glaring instance of such lack is that of expert laboratory assistance. In hardly any hospital in Dublin is the pathological work performed in an efficient way. For the pathologist to give his best help to the physician and surgeon he must be in constant touch with them. He must be not merely the expert investigator of morbid material, but the co-operator whose work begins in the wards and not in the laboratory or in the dead-house. In some of our Dublin hospitals the pathologist only visits the hospital to perform autopsies. As regards his other

contributions to the work of the hospital it consists in reporting on specimens carried to him, and his only communication with the medical man in charge of the case is by means of laconic post-cards. It is, of course, to be understood that I am not blaming the pathologists for the present condition of affairs. For the most part they are teachers engaged in one or other of the medical schools, and the only advantage they get from their connection with the hospitals is an uncertain supply of material for teaching purposes. In most cases they are not paid any salary, and where an honorarium is offered, it is usually such, as in Swift's phrase, would be contemned by "a clerk to an apple-stall." Nor, on the other hand, is it the fault of the hospitals. They have not the funds to meet anything more than the charges for maintenance, and they are as yet unaccustomed to paying for the services of medical men.

But the case of pathology does not stand alone. No hospital of a hundred or a hundred and twenty beds can be adequately equipped with departments for the several specialities. As regards out-patient departments this equalises itself fairly well. The distances between the hospitals are small, and it has occurred that one hospital develops a much frequented throat department, another a department for diseases of the eye, and another for diseases of the skin. But the staff of a hospital which has not the regular attendance of specialists in the several departments suffers a distinct loss. Consultations should be easy and rapid and not a matter requiring a few days' arrangement. One will ask for the opinion of an ophthalmist or an aurist a dozen times if he is in the same building for once if he has to be fetched from Merrion Square. And in the latter case again the consultation is usually not personal but on paper.

It is clear that our present system leaves room for substantial improvement.

With reference to our second point one can, I think, regard the present system with more satisfaction. A great variety of cases is not necessary in the education of medical

students. What is really necessary is concentration on the ordinary methods of physical examination, with training in forming reasonable deductions from the findings. It is more useful to a student to learn the common diseases thoroughly than to have a nodding acquaintance with rarities he may meet once or twice in a lifetime. An adequate, thorough, and useful knowledge may be gained from the run of a comparatively small number of beds. I do not say that a larger range of cases would detract the student from the necessary intensive study, and it would certainly be good for the physician, but it is not necessary. The objection already made as to the comparative isolation from efficient assistance of the physician or surgeon in a small hospital has a certain bearing on the question of the education of the student. He is liable to be impressed with the idea that what is done at the bedside is the whole—or nearly the whole—of the examination of the patient, and he has an inadequate notion of the part that laboratory investigation should play in diagnosis. The small hospital, it is worth noting, lends itself admirably to the system of "resident students," which is the special mark and merit of Dublin medical education. The confidence and capability which the young Irish doctor exhibits in contrast to his English or Scottish colleague of the same standing is due, I believe, almost altogether to this admirable system.

What have our voluntary hospitals in Dublin done in recent years for the advancement of medical knowledge? I am not going back to the generations of Cheyne and Graves, of Stokes and Corrigan, but dealing with the generation in our immediate memory. Have any great discoveries in medicine or surgery been made in Dublin? I cannot think of any. It is true that the general level of surgical technique is as high as anywhere in the Kingdom and higher than in London. Our medicine is sound and safe, but to a great extent it has forgotten that progress in medicine is no longer a matter of the patient and the physician, but a matter of the patient and the physician with a host of allies each specially skilled in

his own line. It is true that in obstetrics and gynæcology we still hold a foremost place, but that may be assigned to the fact that these subjects are dealt with not in the general hospitals but in great maternities.

The truth is that as the years pass advancement of science becomes more and more a matter of apparatus and equipment, and, therefore, of money. I am far from suggesting that no problems of research occur in the wards to be solved by the physician himself, but in most cases he requires for their solution more than the use of his own organs of sense.

Such assistance has not been available in Dublin, and cannot be available, until the hospitals are more adequately supplied with funds.

I may, therefore, sum up my own opinions as to the state of our Dublin hospitals. They give the patient reasonable care; they give the student an efficient training; they are doing little for the advancement of science.

This comparative failure of the Dublin hospitals is due, in the main, to insufficiency of funds, and to a less extent, and with qualifications I have pointed out, to the small number of beds in each. I will take these questions in turn.

What are the existing sources of income? They are :—

1. Property, whether in land or in investment.
2. Voluntary contributions.
3. Payments by patients.
4. Grants from public funds, local and central.
5. Fees of nurses and other small receipts.

The hospitals naturally vary greatly in the extent of their property and in the degree of their dependence on voluntary subscriptions. One hospital was, I understand, by reason of its property, until within the past few abnormal years, able to pay its way without appealing to the public. Another institution—the House of Industry Hospitals—was nearly able to live on its public grants. Those which were depending mainly on landed property have had its value greatly depleted, and their incomes

from property have shrunk to the very small. In no case at present are either the funds or the fixed grants adequate to guarantee the maintenance, much less the efficiency, of the voluntary hospitals.

But the contributions from voluntary sources, hitherto, as I have shown, inadequate, and always precarious, are not merely insufficient to make up the deficiency from other sources, but are themselves gradually diminishing. Wealth in this country has passed to a different class of the community, and the hands that now hold it are as yet unused to giving.

During the past few years it is true that the stream of public charity has naturally flowed towards objects connected with the war, and it is possible that some of this will again reach the voluntary hospitals. But, on the whole, I think it is impossible to hope that income from voluntary sources will ever put our hospitals in a position of security.

In the debate in the House of Lords some months ago concerning the Government grant to the House of Industry Hospitals, the Government representative blandly advised the hospitals to attempt to get more fees from their patients. The management of the hospitals—if it was to keep the institutions open at all—had perforce to accept this advice. It is, therefore, compelled to charge a certain proportion of its patients a full maintenance fee, and to maintain over and above the pay-beds thus provided a limited number of free beds. But this scheme is not one that can be universally adopted. I do not suggest that there has not been much abuse of the hospitals in the past, or that we have not been far too lax in our scrutiny of the means of patients before admitting them to free beds. But there is a large class of the community whose members cannot afford to pay two guineas, or even one guinea, a week when sick. If the voluntary hospitals, as a whole, limit themselves mainly to the class whose members are able to pay, then a large number of the poor will be forced to fall back on the union infirmaries for their treatment, and the voluntary hospitals will have

confessed their inability to discharge their functions. Moreover, the hospitals will find themselves deprived of a large mass of material useful both for teaching and research.

Again, the alteration of the field of activity of the hospital from the poor to the comparatively well-to-do is bound to raise other difficult questions. What is to be the position of the staff in regard to charging fees to these well-to-do patients? Hospital staffs give their services by an honourable obligation gratuitously to the poor. There is no such obligation toward a wealthier class, and the obligation is, indeed, opposed to gratuitous attendance on them. Again, in what relation are we to stand in future to the general practitioner if, instead of assisting him with his poor patients, we are to enter into active competition with him for practice in the class on which he is chiefly dependent, the lower middle class? A competition, too, in which we have the added advantage of a complete hospital equipment at our backs. If the hospitals are to devote themselves mainly to paying patients, it seems to me that the next logical step will be—as is done in many hospitals in England and in some county infirmaries in Ireland—to permit all the practitioners of the neighbourhood to have access to the hospitals and to treat their patients there. Are we prepared for such a step as this, which, to mention no other point, would render systematic teaching impossible? If not, I think we must be careful how far we divert our hospital beds from the poor to the well-to-do.

While expressing this caution, I at the same time feel strongly that more could and should be done to charge fees to patients of the working classes who gain admission to the wards.

In many English hospitals, and also in Belfast, it has been found possible to obtain considerable contributions from the workmen's organizations. In a little book recently published by Dr. Rees of Wigan, he quotes the table of receipts of a provincial hospital (unnamed) of 170 beds in a mining centre. The total income was

£14,256, of which a sum of £8,202 was made up of weekly contributions from the workers of the district. These contributions were, of course, voluntary, but were collected at the source by deductions from the men's wages. I understand that some attempt has recently been made in Dublin to obtain contributions on some such system, but that so far it has failed. The chief reason is the comparative absence of any large employing firms in Dublin as compared with Belfast and the impossibility of reaching the scattered employees. It is unfortunate that, by the short-sighted attitude of those who spoke for the Dublin hospitals in the early days of the Insurance Act, a not unsubstantial contribution which the societies were then willing to give was lost to the hospitals.

As regards the small income hitherto received by some hospitals from nurses—pupils' fees, and the fees paid for the services of nurses—it need not enter into our calculation for the future. Many hospitals have abolished the pupil fee altogether, and nurses are not going to be content with the exiguous remuneration paid them in the past. Like other workers they expect to be paid a wage which will not only give them a livelihood while working but permit them to make provision for their old age. And old age comes early to a working nurse. They are not to be diverted from this demand by either the flattery or the doles of an emotional public. In their demand these fellow-workers of ours have the cordial support of our profession. At any rate, the salaries to be paid to them in future will more than equalise the sums they bring to the hospital.

The only elastic source of income left for me to consider is the public funds—whether local or central—and I am of opinion that we must concentrate on the best means of making such funds more widely available for the hospitals. In Dublin these funds reach us in various ways. Several of the hospitals are in receipt of fixed Government grants varying from inconsiderable sums of less than a hundred pounds to a grant of nearly eight thousand a year in the case of the House of Industry

Hospitals. Most, if not all, of these grants date from the era of the Irish Parliament. The total fixed subsidy to the Dublin hospitals is about eleven thousand pounds.

In addition to these grants, hospitals get grants per day for the care of certain Government servants such as the police and constabulary, during the war of wounded and sick soldiers, and at present of pensioners suffering from service disabilities. During the war these grants were very considerable, and had, unfortunately, the effect of cloaking from the management of the hospitals their really insecure financial position. During the next few years the payments for pensioners will naturally come to a considerable sum, but this source of income is subject to steady and persistent decline to vanishing point.

From local sources the hospitals are helped in several ways. The Corporation of Dublin and some of the suburban townships make direct contributions to the city hospitals. Within the past twelve months the Corporation began to make payments on a new system. For patients suffering from influenza or pneumonia admitted by order of the Corporation a *per caput* payment has been made. Other payments from public sources are the *per caput* payments made for patients sent by boards of guardians or district councils, and payments made by county councils, &c., insurance committees for patients under treatment for tuberculosis. In a valuable memorandum recently issued by the Chairman of the Irish Public Health Council, Dr. Coey Bigger, the various powers of local authorities are enumerated.

It appears to me that there is no option for those concerned in hospital management except to look for a supplement to their income either from the Government or from local authorities. I think, too, that the present is an opportune time for the hospitals as a united body to make such a claim on the public purse. Never at any time was the public mind so impressed with the necessity of attention to matters of health. It is our duty to press on the public the opinion that an efficient defence against disease is as important a function of the national organism

as an efficient army and navy. The hospitals are an essential part of such defensive force, and I believe that if the case is rightly put, it will be irresistible.

Our present consideration is, however, on what lines we should ask that the support should be given. There are several alternatives :—

1. State management of the hospitals.
2. Municipalisation of the hospitals.
3. *Per caput* or *pro rata* grants from central or local funds.

The first of these suggestions is not likely to commend itself to us. The effect of State management would be, most of us think, a general levelling and lowering of standard and a reduction of the hospitals to a condition comparable in comfort and efficiency to the regular army hospitals. It would raise enormous difficulties in regard to the appointment and conditions of service of the staff. It would tend to separate the hospitals from all relation with the local health service. It has, in my opinion, little to recommend it, and much against it.

Municipalisation would be worse. Control by the municipal authority would be even less intelligent than by the Government. Appointments would, as in the other case, be the results of jobbery, but on a more squalid scale. If Government management would reduce our hospitals to the position of military hospitals, the local authority would bring them to the semblance of union infirmaries.

It is necessary to maintain the independence of the hospitals, free from control of both State and city. At the same time we recognize the necessity of and we welcome supervision.

A solution which is open to little objection is, I think, the extension of the present system of payment by the health authority. There is no reason why the health authority should not make itself responsible for payment in the case of every patient unable to pay for his own maintenance in hospital. Moreover, it is likely that the

class for whose medical treatment the public makes itself responsible will soon be largely increased, so as to include the entire lower wage-earning class, and possibly non-wage-earners of a similar financial status. If such a plan should be adopted, it would, at any rate, solve the problem of maintenance.

It may be thought that I have somewhat summarily dismissed the question of contributions from voluntary sources. But all I have said is that I do not regard incomes from such sources as likely to be adequate to put our hospitals in a position of security.

It would, however, be a bad day for the hospitals if the contributions of the benevolent public were to cease. There is ample scope for voluntary effort in supplying what may be called the amenities of hospital life. It can make the difference between bare necessity and comfort. We have all rejoiced to learn that those great organizations—the Order of St. John of Jerusalem and the British Red Cross Society—have taken it in hand to do for civil hospitals what they did for naval and military hospitals during the war. We pride ourselves with justice on the attendance and comfort given to our sick and wounded men during the late war, but, whereas the attendance and the necessaries were provided by the Government authorities, the comforts were the result of voluntary effort. Moreover, the constant pressure of these bodies was one of the main forces which kept steadily raising the level of efficiency in military hospitals.

The Joint Committee of these societies has great experience in collecting funds for hospital purposes, and it is clear that while its exertions should not interfere with individual efforts by the several hospitals, unified effort which could not be undertaken by any other organization will be of great advantage.

It is of some interest to us in Ireland to know that in the first instance the Joint Committee intend to assist provincial hospitals only, excluding those of London. We may, I think, rely on the heads of the organization in Dublin to make sure that our claims are not overlooked

in the distribution of funds. No part of the Kingdom contributed to the Red Cross funds in war time more generously than Ireland, and she has a just claim to generous consideration now.

To sum up, my view of the sources from which our hospitals must claim support in future—maintenance charges must be met for the most part by health authorities, but in part by the patients themselves. Other expenses must come from voluntary contributions.

But, apart from the insufficiency of funds which has always hampered our Dublin hospitals, I have pointed out early in my address, that individually the efficiency of many of them is injured by the small number of beds in each. No doubt some of the hospitals are free from this fault. Two, at any rate, have an adequate number of beds to render the medical service adequate, and to provide a sufficiency of clinical material. But there are eight other clinical hospitals in Dublin with an average of perhaps 120 beds in each.

The question is not whether these hospitals are doing good work or not, but whether the quality of the work can be improved. I have above attempted to draw attention to some of the drawbacks from which they inevitably suffer.

The suggestion has recently been made that greater economy and efficiency would be secured were all or some of these several hospitals to amalgamate into one or two large hospitals.

As regards economy one must define what one means. No doubt amalgamation would do away with a certain amount of salaries. Instead of eight secretaries and eight matrons and eight housekeepers and the multiple other officials at present employed, a smaller number would suffice, but they would necessarily require higher salaries. Experience elsewhere has shown that expenditure is not materially reduced by amalgamation. On the other hand, expenditure is not the only consideration. With amalgamation there should be much less wastage, and consequently better value would be had for the money spent,

and the scheme would be more economical in the true sense. It is not, however, on the mere ground of economy that the scheme deserves our careful consideration. The real question is—would one or two large hospitals meet more fully than six or eight small ones the three *desiderata* I stated at the beginning of this address? Would they give better treatment to the sick and better education to the student, and do more for the advancement of science?

I have suggested above that many of the drawbacks of our present system are such as would disappear if we had larger hospitals. In a large hospital all the auxiliary services could be adequately developed. It is the patient who suffers when his physician or surgeon is more or less isolated from expert help. It has been suggested that hardship would be caused to the sick if, instead of having a hospital at their doors, they had to travel a long distance to the only hospital available. But it is easy to answer this objection. In the first place the distances in Dublin are short. But further, if the hospital should be, as would probably be necessary, situated on the outskirts of the city, there must be established in convenient centres two or more out-patient departments, and to some of these emergency wards should be attached. With a system of motor ambulances to transport both "sitting" and "lying" cases from these outposts to the main hospital, no inconvenience would occur to the sick. From another point of view the individual sick man would find himself in a much better position. At present, in busy times of the year, he may have to spend half a day or more travelling from hospital to hospital seeking a bed. With a unified system he could learn at once whether he could get a bed or not. (Incidentally, I may suggest that this consideration would attract subscribers who at present feel resentment if the hospital to which they subscribe is unable at the moment to accommodate a *protégé*.)

From the point of view of education a large hospital would have certain advantages. Classes could be better organized, so that it would not be necessary to attempt to teach the men beginning hospital work in the same

class with those preparing for their final examinations. If any change such as is suggested is made the resident system must be scrupulously preserved.

Opportunities for post-graduate instruction will be much required in the future. At present medical men from other centres and countries have no opportunity for work in Dublin except in the great maternities, to which they are attracted by the large supply of clinical material. There is no reason why a large general hospital in Dublin should not provide opportunities for post-graduate work as good as any to be found elsewhere.

It is, however, as regards research work that the scheme presents the most obvious advantages. At present no clinical worker in the general hospitals of Dublin has the material available for any extensive research. His number of cases of any particular illness is too small to furnish conclusions of value. In a large hospital, on the other hand, it would be possible to assign to a particular number of the staff all the available cases of the particular disease he might wish to investigate. It is only by such arrangement that knowledge can advance.

I may sum up, therefore, my view that an amalgamated hospital would, as compared with present conditions, provide a better medical and surgical service for the sick, give improved educational facilities and give much greater opportunities for research.

But is amalgamation practicable? I think it may be premised that certain hospitals will decline to join in any general scheme of amalgamation. One or two may be large enough to have already within reach the advantages I have put forward. Others will for sufficient reason prefer to work on the lines on which they have hitherto prospered. Any attempt to press them to join against their will would be equally improper and futile. But omitting such hospitals, there are still some five or six which are at present managed on almost identical lines. They are frequented by the same class of patients. They make their appeal for funds to the same class of the charitable public. They are approximately equal in size, in prestige, and in

public estimation. They are equal in impecuniosity. I submit that by pooling their resources, their prestige, and their energy, they will provide a better service for the sick, offer a better education to the medical student, and advance the cause of knowledge.

NOTES OF ANOTHER CASE OF ENCEPHALITIS LETHARGICA.

By GEORGE E. NESBITT, M.D., F.R.C.P.I.;
Physician to the House of Industry Hospitals, Dublin.

Last February Dr. O'Carroll and I reported some cases of Encephalitis Lethargica which we had just encountered. Our paper was published in the *Dublin Journal of Medical Science* for May, 1919. Since then I have come across a few scattered cases, and I have had the following very typical one recently under my care in the Hardwicke Hospital. As the disease does not appear to have attracted much general attention in this country, possibly on account of its infrequency, I have ventured to submit a further brief account of it.

J. W., male, age 15, was carried into hospital in a completely unconscious condition on Saturday evening, 25th October last. As meningitis was immediately suspected, an attempt was made to obtain cerebro-spinal fluid for diagnosis. The boy's comatose state rendered the operation of lumbar puncture easy, but after several very careful attempts we failed to obtain any fluid. In previous cases fluid of normal character was always obtained without difficulty, generally under increased pressure. During the repeated punctures the boy evinced little or no sign of pain, and lay literally like a log in whatever position he was placed.

The history, as given by his mother, contained some points of interest. Though on the whole a healthy boy,

at the age of seven he had a discharge from both ears, which continued for some time. It was not present during the past few years, but a fortnight before admission he got a pain in his ear and a bad headache. About a week before, he had fallen on his head while engaged in the pastime of walking on his hands in the street. From this time on he was noticed to be getting drowsy and losing interest in his surroundings. He developed some fever with flushed face and free sweating, and some muscular twitchings were observed. During the few days before admission he gradually became less and less conscious, till finally his family grew seriously alarmed, because he could not be roused at all.

On examination he was, as stated, deeply comatose. He lay as if in a deep and very placid sleep. His colour was good, pulse 68, full and regular; temp. 99 deg. There was no dyspnœa, stertor, or other notable sign. His limbs were slightly stiff, with no evidence of paralysis, but a remarkable catatonic condition was present—*i.e.*, when a limb was raised to an unnatural position it remained elevated for a few moments before slowly sinking down on the bed. The same curious phenomenon was noticed on sitting him up in bed—he subsided gently back on his pillow as if he were made of wax which was slowly melting. Our utmost efforts to rouse him only succeeded in getting him to open his eyes feebly. His neck was a little stiff, but not rigid or retracted. His face was unduly immobile, though there did not seem to be any definite paralysis of the facial nerve. There was distinct strabismus, but the light reflex was present though sluggish. Knee jerks were slightly increased, a painless "Kernig" was present, and "Babinski" positive. He had incontinence of urine and fæces, but a catheter specimen of urine contained neither albumen nor sugar. The other organs were normal.

Next day his condition was unchanged, though during the night he had been roused sufficiently on one occasion to answer questions, which he did intelligently. When lifted up and given a drink, he dribbled most of it out,

held some in his mouth for a few moments, and then gulped it down. Dr. Cummins examined the eyes and ears, and reported nothing abnormal in the discs. The ears were also normal, and, in his opinion, an intracranial lesion of the ordinary type might be excluded.

The general aspect of the case impressed one in that it did not fit any of the text-book varieties of coma, and though stupor of mental origin—*e.g.*, dementia præcox—suggested itself, I had very little doubt on account of the striking resemblance to the cases I had previously seen, that we were dealing with Encephalitis Lethargica. Accordingly, in spite of the boy's apparently serious condition, I gave a hopeful prognosis.

The subsequent history of the case was rather uneventful, but quite satisfactory. He was taking so little food that, after a few days, I had to feed him by stomach tube, and during this time his coma had, if anything, deepened. On 29th October some improvement was noticed. He woke up when spoken to, and replied quite clearly, but when left alone he immediately dozed off again. This feature of all the cases has impressed me particularly, and is, I think, of great importance in diagnosis. While the case was being demonstrated to the class, he betrayed no sign of consciousness during the complete physical examination. When those around the bed were quite convinced of his profound coma, I spoke loudly to him, and shook him up, when to the general amazement he opened his eyes and spoke quite naturally. This remarkable phenomenon is well illustrated in the accompanying photographs, taken one immediately after the other. The first gives a very good impression of the somnolent condition in which he lay for about ten days; the second, taken after he had been roused, shows the somewhat characteristic mask-like facies. Progress was continuous till about 5th November, though he still slept most of the time, but he could be roused more easily. He then had a relapse in which he became almost as comatose as before, but by 10th November he had again improved. He was taking food well, was in fact very hungry, was easily

Fig 1.

Showing the condition of somnolence which characterises the affection.

Fig 2.

Taken immediately after—patient having meanwhile been roused Note the facial weakness.

roused, but always slipped off to sleep again when left alone. Strabismus had disappeared, nystagmus was still present. On 14th November for the first time I found him awake, and he asked to be allowed out of bed. Convalescence was rapid, and he was discharged quite well on 4th December, 1919.

There is some evidence that this curious disease is an ancient one, but its recognition as a distinct entity dates from its simultaneous description in 1917 by Netter in Paris and by Von Economo in Austria. In 1918 a considerable number of cases occurred in England, and were mistaken for Botulism. These cases were thoroughly investigated by the Local Government Board and the Medical Research Committee conjointly, and the results were published in the form of a "report on a new disease."

The clinical course was found to be divisible into two periods, but without any sharp distinction. The prodromal stage was indefinite, frequently with initial catarrh, emotional changes, drowsiness, headache, vertigo, and sometimes diplopia. It lasted about a week. In the acute illness the most characteristic sign was stupor. Many cases presented evidence of cranial nerve paralysis, particularly of the ocular nerves. This paralysis was often transitory and frequently bilateral. Optic neuritis did not occur.

The pathological findings are comparatively slight, and consist of minute hæmorrhages in the pons and fourth ventricle, with some round cell infiltration about the small vessels. They resemble those of sleeping sickness. Bacteriological investigation has, so far, proved negative. Treatment is, therefore, entirely symptomatic, but prognosis is better than might be expected from the serious aspect of the cases, the mortality in the English cases being about 25 per cent.

(*a*) A MODIFIED KJELDAHL METHOD FOR THE ESTIMATION OF NITROGEN. (*b*) THE CARBAZOL TEST FOR NITRITES. (*c*) A COLOUR TEST FOR TRYPTOPHANE IN THE URINE.

By W. A. FEARON, M.A., Sc.D. (Dublin), A.I.C.;
Royal Society and MacKinnon Research Student.

Modifications of the Kjeldahl Method for Estimating Nitrogen in Urine and in Foodstuffs, such as Protein Digests and Milk.

As the result of a large number of nitrogen estimations the following were the most important alterations in the original technique :—

Incineration.—A mixture of sulphuric and phosphoric acids gave a much better result than sulphuric acid alone. The following mixture can be recommended :—

Sulphuric Acid ...	... 100 c.cs.
Phosphoric Acid ...	... 200 grms.
Copper Sulphate	... 5 grms.

The mixture is best made by dissolving the phosphoric acid and the copper sulphate in the minimum amount of water and then adding the sulphuric acid.

The amount required for incineration will depend very much on the material under examination. Generally, from two to three times its volume will be sufficient.

The Folin fume absorber is very useful for incinerations, as it does away with all necessity for a fume cupboard, and the combustions can be carried out in the general laboratory.

It is very important that the sulphuric acid be carefully controlled by blank experiments. Many recent samples of alleged purity were found to contain considerable quantities of nitric and nitrous impurities.

Distillation.—For extensive work the steam distillation method is the most satisfactory.

Rapid estimations can be carried out very well by the Cole method of distilling with alcohol.

For the rapid estimation of nitrogen in urine the method

of Folin and Wright (1919) is very convenient. The whole operation from start to finish takes about twenty minutes, which is an advantage for class and clinical work. The chief objection is that the " bumping " may become violent unless the distillation is very carefully watched.

For titrations, methyl red, 0.1 per cent., was found to be a very good indicator. Provided that the alkali is free from carbonates and bicarbonates the change is quite sharp.

As the result of many analyses of urinary nitrogen, I am strengthened in my conviction that by itself the estimation of the nitrogen in the urine is of very little value in medicine unless the various forms in which that nitrogen is excreted are also estimated.

An analysis of urinary nitrogen should comprise :—

1. Total nitrogen.
2. Urea nitrogen.
3. Ammonia nitrogen; and, for some cases,
4. Purine nitrogen.
5. Amino acid nitrogen.

The Carbazol Test for Nitrites. The Identification of Tryptophane in Urine.—No one who has ever performed many estimations of urinary nitrogen by the Kjeldahl method can fail to have noticed the variety of colours produced on the addition of excess of strong sulphuric acid to urine.

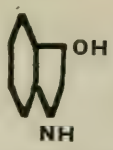
These colours vary very much in different samples, but I have never yet come across a specimen of urine that failed to give a colour with excess of sulphuric acid.

The colour may be anything from an orange vermilion to a deep violet. When this phenomenon is mentioned in the text-books it is generally referred to the presence of urinary chromogens.

Now, the principal organic compounds that may be found in urine which are capable of giving rise to coloured derivatives are :—

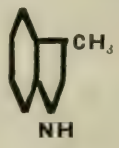
1. Indole

2. Indoxyl.

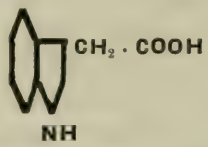


which, as the potassium sulphonate, is a normal constituent of urine. The "ethereal sulphates."

3. Scatole—

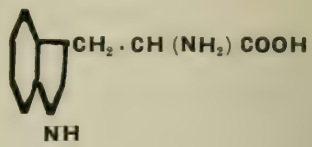


4. Indole acetic acid—



which gives rise to the well-known "Urorosin" reaction of urine.

5. Possibly tryptophane—



and a number of other bodies, such as

6. Urochrome, which gives the characteristic yellow colour to urine. It has no absorption bands when examined spectroscopically. It has marked reducing properties. Nothing certain is known as to its constitution or origin.

7. Urobilinogen, which is converted into urobilin by acids or by the action of light and oxygen.

It is of considerable clinical interest as a measure of the secretion of the bile. It gives Ehrlich's reaction with p-dimethyl amino-benzaldehyde, which, however, is by no means a specific colour test.

There are also less definite pigments and precursors of pigments occasionally in urine, such as urœrythrin, hæmatoporphyrin, homogentisic acid, and related bodies.

The whole question of urinary pigments and chromogens is extraordinarily confused, but I believe a rough distinction may be made between two groups.

(*a*) Pigments and chromogens arising from the bile and hæmoglobin, such as urobilin.

(*b*) Pigments and chromogens arising from the foodstuffs in the alimentary tract, such as indoxyl.

I doubt if the full significance of these latter bodies has been widely recognised. Indole and scatole are not, as far as we know, normal products of protein digestion; when they occur they are due to bacterial decomposition. Since they can only reach the urine by means of the blood, their occurrence in the urine is an index to their presence in the blood.

Now many, if not all, of these substances are derived from the amino acid, tryptophane; and some of them, such as tryptamine, are very toxic indeed.

It is generally acknowledged that these bodies in the urine are due to intestinal putrifaction; but, as far as I am aware, their importance in regard to the concomitant phenomena of auto-intoxication is not appreciated. Very little attempt has been made to estimate them in such conditions. The subject seems a promising one.

When urine is added to strong sulphuric acid a red colour is often produced. This, I believe, is due to the presence of indole and its derivatives, such as scatole and indole acetic acid, interacting with the nitro group, which may come from the nitrites in urine or the nitrous acid in impure sulphuric acid.

Tryptophane and its derivatives do not give a nitroso reaction under these conditions.

The following is a simple test for nitrites in urine or similar fluids :—

To a few c.cs. of strong sulphuric acid in a test tube add a very small quantity of carbazole; shake well. If the sulphuric acid is pure, no colour change will be observed.

Then, on adding a drop of urine, if nitrites are present,

a deep green colour will develop. The test is extraordinarily sensitive, and will show nitrites to the extent of about one part in half a million.

The mechanism of the test I hope to describe in a later communication.

The Detection of Tryptophane in Urine.—The ordinary colour tests for tryptophane are inapplicable to urine on account of the other indole bodies present.

For example—all urines that I have examined will give the well-known Hopkins-Cole glyoxylic reaction.

But tryptophane is able to condense with glyoxylic acid in the presence of sulphuric acid to give a body very similar to carbazole; and this body gives a green nitroso derivative, like that of carbazole, but hydrolysed on dilution with water.

Consequently, if urine containing tryptophane be treated with excess of the glyoxylic reagent and a drop added to strong sulphuric acid, the tryptophane condensation body interacts with the nitrites of the urine to give a deep green colour.

This test is not given by indole or scatole. The test requires some familiarity. If too much urine be added, the red colour of the indole and scatole derivatives will mask the green colour; also, the well-known glyoxylic reaction will take place, resulting in the formation of purple colourations. As a general method, I evaporate 50 c.cs. of urine to dryness on the water-bath. If any free indole is present, it will be driven off with the steam. I then extract the residue with 10 c.cs. of the glyoxylic reagent in the cold. Add 1 drop to 5 c.cs. pure sulphuric acid, warm gently, and the development of a deep green colour indicates the presence of tryptophane or tryptomine.

Tryptophane is not of common occurrence in urine. I have not yet collected enough data for the publication of its percentage presence in various disorders. I believe, however, that it is of great significance.

The excretion of amino acids in the normal urine is about 0.4-1.0 gm. per diem (Van Slyke).

REVIEWS

Dementia Præcox and Paraphrenia. By Professor Ernil Kraepelin, of Munich. Translated by R. Mary Barclay, M.A., M.B., from the eighth German edition of the "Text-Book of Psychiatry." Vol. III., Part 2, Section on the Endogenous Dementias. Edited by George M. Robertson, M.D., F.R.C.P. (Edin.); Edinburgh : E. & S. Livingstone. 1919. Pp. x + 331.

This translation of the portion of Kraepelin's Text-Book of Psychiatry dealing with the Endogenous Dementias will be welcomed in no half-hearted fashion.

The subject is one of infinite interest, including, as it does, such a large proportion of our permanently insane. Few entities have met with so much criticism and hostility at their birth as this particular product of the author's investigations. It is now over twenty years since he first put forward his claims for the recognition of the disease as a separate entity.

He acknowledges the precedence of Clouston in describing his adolescent insanity, though he had not noted it as being distinct from the manic-depressive cases, which frequently show some symptoms about the same age-period.

To give the characteristic features covering all types of dementia præcox is a problem of some magnitude. Kraepelin is not yet satisfied that he has delimited its boundaries with complete exactitude. The very name of the entity is not in consonance with, at least, some of it types—for neither precocity nor dementia, as generally understood, is an essential to the existence of the disease. Much thought and study are still required in order to place it upon a satisfactory basis.

In his introduction to the chapter upon the Endogenous Dementias, the author declares that they all display two peculiarities : in the first place, they arise from internal causes; and, secondly, they lead to mental enfeeblement.

Hitherto he has included certain clinical pictures, differing considerably from the current conception of dementia præcox. He now delimits, under the term Paraphrenia, "certain morbid forms, distinguished by very definite manifestations of peculiar disturbances of intellect while lacking enfeeblement of volition, and especially of feeling, or where such symptoms are but feebly indicated."

The work under review starts with a description of the psychic symptoms, covering, amongst a multitude of others, such well-known phases as catatonia, negativism and stereotypy.

The extraordinary grotesque delusions, attitudes and mannerisms are dealt with in great detail. The derailments in linguistic expression, paraphasia and neologisms, which make for such senseless collections of syllables, are analysed with that masterfulness alone born of exceptional experience.

Thence the author proceeds to give an account of the bodily symptoms, including the disorders of the psychomotor domain, the spasmodic phenomena and the seizures frequently found in association with the disease.

The clinical forms as delimited are of a very special interest. Hitherto, Professor Kraepelin has given us three groups:—The Hebephrenic, the Catatonic, and the Paranoid.

Later, Bleuler, Räcke, and Wieg-Wickenthal extended this classification. The author admits the inadequacy of his previous grouping, and he presents to his readers the results of a further investigation of five hundred cases in Heidelberg. Unfortunately, these do not include the recovered cases, chiefly on account of the uncertainty of their exact significance. The grouping, therefore, only includes those cases which have "led to profound dementia or to distinctly marked and permanent phenomena of decreased function."

In all, nine groups are now described.

The question of general prognosis has been the subject of some controversy. Contradictory statements have come from various investigators which, in the author's

opinion, are due to differences of diagnosis, varying delineations of the disease, &c.

All agree, however, upon the unfavourability of the issue—terminating, as it usually does, in some degree of mental enfeeblement.

The author has unsuccessfully tried preparations of every possible organ in order to combat the disease. Bilateral castration, excision of the thyroid and immunisation have in turn been advocated by others. As a rule, treatment, according to our present knowledge, will be found more than a little disappointing.

Some expressions of gratitude are due to the translator and editor for placing this important work within the reach of the many, who may not be able to read the language of the original.

The book is well produced, freely illustrated, and reflects credit upon all concerned in its publication.

H. R. C. R.

Teaching the Sick. A Manual of Occupational Therapy and Re-education. By GEORGE EDWARD BARTON, A.I.A. W. B. Saunders Co. 1919. Pp. 163.

RE-EDUCATION of the sick is the keynote of this handbook, as the methods described aim at fitting a patient to return to his own trade enriched by an additional insight into the possibilities of that trade, and stronger through his ability to do more; or, if the patient can no longer work profitably at his old job, to fit him for one in which the greatest amount of his old knowledge and ability may be made use of in some new line—as the author puts it, to fit him for a job better done, or, for a better job.

The first part, dealing with general principles, is discursive, lacks clarity, and abounds in generalities. The second part, dealing with teaching the sick, is practical, suggestive and amusing. The third part, "Vici," gives

practical results, including an interesting description of how successful the blind can be in poultry raising.

The re-educational method used at Consolation House aims at interesting the patient and tempting him to learn without knowing that he is taught. Paper-folding teaches plain geometry (incidentally the proper folding, for King Albert's and the Kaiser's tickets to heaven is fully illustrated); mechanical drawing is universally useful, and is taught as a recreation; chip-carving (the pattern and not the ground cut away). Modelling and model buildings erected to scale are introduced as pleasant tasks, and when strength is sufficiently restored the model is taken into the open, and with it as a plan for a full-sized building is erected.

This handbook can be cordially recommended to all who have to deal with the human *débris* of war, and it may also be studied with advantage by those engaged in the bringing up of children.

A Medical Field Service Handbook. By C. Max Page, D.S.O., M.S., F.R.C.S., Acting Lieut.-Col., R.A.M.C. (S.R.), O.C. Field Ambulance. With Foreword by Major-General Sir George Makins, G.C.M.G. London: Henry Frowde and Hodder & Stoughton. 1919. Cr. 8vo. Pp. xiv + 159.

This Oxford War Primer is based on practical experience on the Western Front, and, although short, derives interest from being chiefly devoted to those milder diseases of war which sometimes get short shrift in more pretentious works.

Atlas of Operative Gynæcology. By Barton Cooke Hirst, M.D., Professor of Obstetrics, University of Pennsylvania. Philadelphia and London: J. B. Lippincott Co. Large 8vo. Pp. 292 + vi.

In a contemporary (*Surgery, Gynæcology and Obstetrics*) we note the announcement that there is already a "second printing" of this atlas: this would be an unusual sign of

popularity were it not for the fact that we live in an age of pictures; in fact, pictures have come to stay. Picture palaces and picture papers have been succeeded now by a portrayal of the mechanism of labour on the cinematograph, and the public is inclined to buy a picture book without a close study of its contents. By this observation we do not mean to disparage "Hirst's Atlas," for it is a valuable addition to the literature, containing 164 plates and 46 figures, with a useful letterpress subordinated to the illustrations.

Theatre equipment is first described in detail; several operating tables and about 100 instruments are illustrated. The general technique of the theatre is very similar to the Vienna pre-war technique, and is only suitable to an institution which has a very large assistant and nursing staff, many sets of instruments, and which must be a "one man show."

The perinæorrhaphies, which are first described, are most unnecessarily complicated. Two or three methods of interposition are dealt with; in short, most of the ordinary operations are described and illustrated, but there are notable exceptions. We find only two operations on the cervix—viz., a circular amputation and a trachelorrhaphy; in our opinion, an operation for the cure of erosion should not have been omitted. One of the most difficult conditions to cure is a recto-vaginal fistula, and it is not honoured with a place in the Atlas.

With these few comments we reiterate our praise of a volume of illustrations worthy of the best American traditions.

B. S.

Acta Chirurgica Scandinavica Sub Titulo *Nordiskt* Redigenda Curavit Einar Key, Stockholm. Vol. LII. Fase I, II. Stockholm: P. A. Norstedt & Eöner. 1919. *Medicinskt Arkiv*. Condidit MDCCCLXIX Axel Key.

The *Nordiskt medicinskt Arkiv* was first published in 1869 by Professor Axel Key (Stockholm). It contained

original works in the Scandinavian languages from Denmark, Finland, Norway and Sweden, followed by French *résumés*, and also by extracts from the other medical literature of these countries. In 1901 the Arkiv was divided into a surgical and medical section, and from that time also the contents were generally translated into foreign languages.

The object of the publication is to collect the more important medical works from the Scandinavian countries and Finland and to publish them so as to make them available to the foreign medical world.

In these days when scientific work in general, and especially the co-operation between scientific men of different countries have suffered through the war, such a united front is certainly of great value.

Space permitting, it is also desired to take in works by medical authors from other countries in the hope of forming a united and useful link between the nations.

The old Scandinavian title, Nordiskt medicinskt Arkiv, has, however, hampered the circulation of the periodical, as the foreign reader has easily drawn the conclusion from that title that the contents are printed in a language which he does not understand, although its contents have for a long time been translated into English, French or German. After conferring with colleagues in the four countries the title of the paper has therefore now been altered, and it has been considered more suitable to chose *a quite neutral Latin name* which at the same time denotes its Scandinavian origin. From and with volume 52 one section will be called *Acta Chirurgia Scandinavica*, the other *Acta Medica Scandinavica*. As the common title of the two, otherwise quite independent, publications is retained the old and well-known name *Nordiskt medicinskt Arkiv*. The sequence of volumes will therefore continue.

We hope that the two Acta Scandinavica will be greeted with interest by colleagues in all countries and be supported by subscriptions and literary contributions.

There are publishers at Helsingfors, Copenhagen and Christiania as well as at Stockholm.

Rules for Recovery from Pulmonary Tuberculosis. A Layman's Handbook of Treatment. By Lawrason Brown, M.D., Third Edition. Thoroughly Revised. Lea & Febiger. Philadelphia and New York. 1919.

One is constantly requiring in practice a short hand-book which may be given to phthisical patients with the object of enabling them to acquire a workable knowledge of the reasons underlying the routine of treatment which they have been advised to follow. This little book is suitable for the purpose. It is written in an easy conversational style, and should be thoroughly understandable by the most unsophisticated patient. It deals with practically every detail of the daily life of a tubercular patient, and in addition gives some information concerning the disease itself and its method of cure. We can recommend it strongly.

Encyclopædia Medica. Second Edition, under the general Editorship of J. W. Ballantyne, M.D., C.M., F.R.C.P.E. Volume VI. Heat Fever to Intertrigo. Edinburgh and London: W. Green & Son, Ltd. 1919. Royal 8vo. Pp. viii + 658.

Among the principal articles in this volume, which has been published after a long interval, are monographs on Hemiplegia, Heredity, Hernia, Hip-joint injuries and Diseases, Hospitals, Hydatid Disease, Hydrocephalus, Hydrology, Hypertrophy, Ichthyosis, Infant Feeding, Infection, Inflammation, Influenza, Insanity.

New articles on Hermaphroditism, Housing, Hydrology, Hysteria, Immunity also find a place in this volume. The respective authors of these new articles are Dr. David Berry Hart, Dr. A. Maxwell Williamson, Medical Officer of Health for Edinburgh; Mr. William Armstrong, J.P., Medical Director, Buxton and Bath Dietetic Clinics; Dr. S. A. Kinnear Wilson, and Dr. William MacDonald Scott, Medical Officer, Ministry of Health.

The volume is copiously and well illustrated both by coloured plates and by figures in the text.

ABSTRACTS OF MEDICAL LITERATURE.

SURGERY.

SURGERY OF THE NECK.

ORTH: *Clinical Experiences with 300 Thyroidectomies.* "Dtsch. Ztschr. f. Chir." Feb., 1919, pp. 360-372.

In 300 goître operations, Orth had five deaths, an operative mortality of 0.17 per cent. One was due to secondary hæmorrhage, one to embolism, and one to tetany (on the 14th day). The thyroid gland is but one link in the ductless gland chain: recognition of this physiological interdependence is more easy in the female, and cases are cited of the development of goître after such operations as splenectomy, oophorectomy, and myomectomy. Thyroidectomy has been followed by absorption (six weeks' fœtus) and severe metrorrhagia.

Preoperative laryngological examination is important: in 100 cases so examined, Orth found 6 pareses and 1 paralysis (carcinoma). Paresis may be due to tracheal displacement by enlarged thyroid lobe. *X*-ray examination is useful, 1st, to determine which of two enlarged lobes is causing tracheal displacement; 2nd, in intrathoracic goître; 3rd, to determine the presence of thymus enlargement.

Local anæsthesia (Schleich's infiltration) is the method of choice: no untoward results have followed: in only 5 cases of intrathoracic goître was other narcosis subsequently necessary. "Goître-heart" cases are given digalen and veronal overnight.

Several anomalies of the inferior thyroid vessels were observed: for this reason, early mobilisation of the upper pole is to be recommended. Nerve injuries (recurrent laryngeal) may occur with even the most expert operators; prognosis is fairly good, as a compensatory approximation of hyoid bone and thyroid cartilage may often be brought about. Apart from trauma, irritation of the nerve fibres, leading to temporary paresis, may be induced by washing out the wounds with antiseptics. Orth uses no post-operative drainage: absolute hæmostasis, with primary wound suture, permits his patient to be up on the 3rd day and out on the 10th.

WILLIAM DOOLIN.

Dunhill, T. P.: *Some Considerations on the Operation for Exophthalmic Goître.* "British Jour. of Surg." Vol. 7. No. 26.

Discussing the operative technique the author emphasises the following steps:—

1. The making of a true collar incision, in which skin, superficial fascia and platysma are completely divided and reflected upwards and downwards, leaving the anterior jugular veins and deep fascia untouched.

2. The deep fascia is divided vertically between the anterior jugular veins down to the thyroid cartilage and isthmus of the thyroid gland. This fascia, together with the infrahyoid muscles, is then strongly retracted laterally on the side from which the lobe is to be removed. The infrahyoid muscles rarely require division, and the fascia and muscles are *not* retracted on the opposite side.

3. Thorough separation between the underlying areolar tissue and the true capsule of the thyroid, to avoid wrong planes of cleavage and consequent risk of hæmorrhage. Separation is first effected anteriorly and laterally, the lobe is then partly delivered and separation of the areolar tissues completed laterally and posteriorly, thus carrying back from off the gland the inferior laryngeal nerve and parathyroids. Dislocation is then completed, and the upper pole with its vessels cleanly defined.

4. The upper pedicle is clamped with three pairs of forceps and divided between the lower two. The upper forceps is for the purpose of crushing a collar on the vessels in which a ligature may be secured without risk of slipping while the vessels are held down in view by the other forceps.

5. As the lobe is freed from above downwards on the side of the trachea, outgrowths from the gland, more or less pedunculated, are frequently met with on its posterior surface wedging themselves in behind the trachea. These should always be removed completely or they will subsequently increase in size with recurrence of symptoms.

6. Definition and ligation of the inferior thyroid vessels and complete delivery of the lower pole.

7. Removal of all thyroid tissue from the lateral and anterior surfaces of the trachea, leaving no shaving behind, as recommended by Kocher. The author believes such tissue will grow and reproduce symptoms later.

8. Removal of the entire isthmus with the lateral lobe. If the isthmus it left it will grow into a lobe. The isthmus should not be crushed before division, and the cut surface should not be

closed by suture, only bleeding points being underrun with ligatures.

9. Careful ligation of all vessels; drainage for twenty-four hours through a stab incision in the middle line below the collar incision; accurate closure of the mesial opening in the deep fascia and of the skin incision.

In the majority of cases a second operation will be necessary on the remaining lobe, and should be performed three or four months later through the same collar incision. The vertical incision in the deep fascia should be sufficiently lateral to that of the first operation to avoid the scar tissue of the latter. Most of the lobe is removed, the upper pole with its vessels intact being left undisturbed.

Rarely a third operation has proved necessary, usually owing to the presence of an unsuspected mass of thyroid tissue growing from the postero-internal border of the remaining upper pole and lying behind the larynx. This operation may prove very difficult. Sufficient gland must be removed to relieve the condition, and the author does not believe myxœdema will develop if gland to the size of a Spanish chestnut is left behind.

The author considers the chief points in a first operation are:—(1) Secure ligation of superior vessels; (2) meticulous cleaning of the lateral and posterior aspects of the lobe. At a second operation the important points are:—(1) Efficient display of the whole field before incising the gland; (2) judgment as to how much should be removed. At a third operation the important point is to approach the remains of the gland by a *flank* and not by a *frontal* attack.

Preliminary ligation of the superior thyroid vessels is not recommended because: (1) It is not necessary except in severe cases. (2) In severe cases this procedure has been followed by as much disturbance as has removal of a lateral lobe under local anæsthesia in similar cases. (3) Ligation leaves the major operation of extirpation still to be done.

For anæsthesia the author prefers infiltration with novocaïn-suprarenin solution without the use of morphia or other narcotic. In cases where the heart is sound, and where there are no evidences of visceral degeneration, open ether may be employed. Chloroform should not be used.

W. Pearson.

Lahey, Frank H.: *Preliminary Ligation in Hyperthyroidism.* "Boston Med. and Surg. Journal." Vol. CLXXXI. No. 21.

The author has formed a high opinion of the value of pole ligation as a preliminary to partial thyroidectomy in hyperthyroidism. It is indicated in every case in which even a suspicion exists that

the patient cannot withstand the complete operation, and it may be performed in one or two sittings. Pole ligation interrupts the impulses reaching the gland from the superior cervical sympathetic ganglion, it blocks the lymphatics which leave the gland in company with the superior thyroid veins, and it cuts off nearly one-half of the blood supply to the gland, so that whatever view one may take as to the manner in which the thyroid functionates the procedure is bound to interrupt the process in some measure.

The effects observed after pole ligation are:—(1) Immediate gain in weight; (2) lowering in pulse-rate; (3) improvement in nervous condition. The patient also becomes accustomed to hospital, and so faces the second operation with more composure.

If one pole only is ligated at the first sitting, the second is tied some two or three weeks later. After double pole ligation the patient returns home for eight weeks before extirpation is undertaken. Ligation of the inferior poles is not advocated.

The operation is performed through a short transverse incision placed over the superior pole, the infrahyoid muscles being divided if necessary. Care should be taken that all branches of the vessels, including the posterior ones which run down on the back of the gland, are included in the ligature.

The anæsthetic preferred is a combination of scopolamine, morphia, novocaïn and nitrous oxide.

The only disadvantages of pole ligation are the additional scars, and occasionally some added difficulty in freeing the superior pole during subsequent partial thyroidectomy.

W. Pearson.

Dustin and Zunz: *Functional relations of Thyroid and Thymus.* "Jour. Phys. et Path. gén." 1918. XVII., 905.

From numerous observations recorded, there has been shown to exist a physiological interdependence between the thyroid and thymus glands. In seeking to verify such conclusions, the authors examined many soldiers recently dead of wounds received in battle: by this means they sought to eliminate pathological changes in the thymus the result of old-standing disease. A number of weighing experiments permit them to state as a general conclusion that a relative reduction in the size of the thymus is associated with increase of the thyroid, and *vice versâ*. Total thymic atrophy is exceptional in normal adult males who have died within a few hours of injuries received in battle.

William Doolin.

Jefferson, Geoffrey: *Fractures of the Atlas Vertebra.* Report of Four Cases, and a Review of those previously recorded. "Brit. Jour. Surg." January, 1920. Pp. 407-425.

The four cases recorded by the author are: (1) A fracture of the

posterior arch of the atlas due to an aeroplane accident. The patient recovered consciousness in twelve hours. There was no headache and no neurological signs. The neck was stiff and sore. Rotation of the head was painless, flexion very limited, and extension extremely painful. The patient supported the sub-occipital region with his hand on rising to a sitting posture. An *x*-ray showed the arch of the atlas fractured in two places at the groove for the sub-occipital nerve. Three months after the accident movements of the head and neck were free and painless. (2) Fracture of the left lateral mass by gun-shot. This patient, wounded in 1917, had practically no movement at the occipito-atlantal joints. He had severe occipital neuralgia and hyperasthesia in the distribution of the great occipital nerve.

Cases 3 and 4 are museum specimens showing fracture of the posterior arch in one case which died instantly, and in the other a fracture of the anterior arch and of the odontoid process. This patient must have survived the injury for a time, as there is evidence of commencing repair. Including his own, Jefferson has collected 21 cases of isolated fracture of the atlas. Seven died as a direct result of the injury, though only two were killed outright: three died from other causes, and eleven recovered.

In complicated fractures of the atlas the bone most often implicated was the odontoid process. The next most common injury was a subluxation of the atlas on the axis. Less commonly a distant vertebra was fractured. Fracture of the atlas usually involves the arches, and is probably due to the transmission of force, produced by a fall on the head, tending to separate the lateral masses, which are forced outwards between the downward and outward thrust of the occipital condyles and the counter-thrust of the outwardly directed facets of the axis vertebra. This mechanism of outward thrust of the lateral masses explains the frequent immunity of the cord.

Other factors which can only intervene when the head strikes the ground in full extension are: (1) Crushing of the posterior arch between the occiput and the arch of the axis; and (2) direct impact of the anterior arch upon the odontoid process.

The chief sign of axis-fracture is rigidity of the neck muscles. Nodding is the movement most impaired. Inability to rotate the head may occur with fracture of the anterior arch, and is *not* pathognomic of a broken odontoid. Occasionally a pharyngeal protrusion is felt. A lesion of the great occipital nerve is an aid to diagnosis which is clinched by careful radiography.

As regards treatment, where the medulla is injured laminectomy may be necessary (in one recorded case it might have led to recovery). Immobilisation is, however, the rule, preferably in a plaster case of the Lorenz type, made by moulding crinoline wrung out of plaster-of-Paris, to the back of the patient from the vertex to the loins.

A. K. H.

SURGERY OF THE CHEST.

STIVELMAN B. : *False Pneumothorax.* "Jour. Amer. Med. Assoc." January 3rd, 1920. Pp. 12-14.

THE term "false pneumothorax" was applied by French writers to those cases which appear by roentgenologic examination to show the presence of a pneumothorax, where in reality such a condition does not exist. When it occurs on the right side it is due to a subphrenic abscess containing gas, and when on the left side it is due either to a diaphragmatic hernia or to an unusually high position of a dilated stomach. The author describes a case where this condition was simulated in a tuberculous patient, the left lung was diseased and in a contracted and fibrotic condition, causing a high arching of the diaphragm and the displacement upwards of the dilated fundus of the stomach. A careful *x*-ray examination will usually enable a correct diagnosis to be made. Also these extrapleural air pouches are characterised by their failure to absorb the gas they contain. The height of the fluid level in a false hydro-pneumothorax on the left side varies markedly with the ingestion of food and with the emptying of the stomach. By means of the *x*-ray a barium bolus may be seen to enter the supposed hydro-pneumothorax. Finally, a localised hydro-pneumothorax may be simulated by the diaphragm and stomach, when they are in a high position, due either to extreme pulmonary fibrosis or gastrectasis, and this possibility should be considered when an exploratory puncture is contemplated.

R. A. STONEY.

CHAPLIN, H. : *Observations on Chest Wounds.* "Jour. Amer. Med. Assoc." January 3rd, 1920. Pp. 4-12.

THIS article is based on a study of 53 consecutive cases admitted to the American Red Cross Military Hospital during a period of over five months. Among these, 30 per cent. were perforating wounds, 60 per cent. were penetrating, 6 per cent. wide open wounds, and in the remaining 4 per cent. there was no record of the condition. Chaplin points out that even in non-infected hæmothorax there is a fever of from 99° to 101°, with moderate rise in pulse-rate and irritating cough, and with a large collection of fluid severe dyspnœa: still, as a rule, it was easy to diagnose this condition from those cases where there was infection. He advises, however, that frequent exploration and cultures of the fluid should be made.

He concludes that the diagnostic means of needle puncture, stereoscopic and fluoroscopic examination should be freely employed; as a non-operative measure, repeated aspiration has a very important place in the treatment, if judgment is used in

employing it. In cases requiring thoracotomy and drainage, or when this is all that can be attempted, local anæsthesia is of great value. On the contrary, when large infected clots are present, and the patient's condition will permit, a more radical operation is to be preferred. Foreign bodies in the lung are tolerated with unusual ease, both in non-infected and in infected cases, so that, whereas, in the latter case an attempt should be made to remove them, no great dread need be entertained if they must be allowed to remain. It is most encouraging to see how much lung expansion can occur even after severe injuries and infections in the pleural cavity. The question of the best type of early operative treatment for chest wounds he considers cannot yet be determined, and must depend to a large extent on administrative difficulty of providing special hospitals to which thoracic wounds can be sent directly from the front.

R. A. Stoney.

SURGERY OF THE EXTREMITIES.

Lewis, D. and Gatewood, W.: *Treatment of Causalgia.* "Journ. Amer. Med. Assoc." January 3, 1920. Pp. 1-4.

The authors state that though varying degrees of pain are observed after peripheral nerve injuries, only the intense paroxysmal type should be regarded as causalgia, and they only found four cases of true causalgia among 550 cases of peripheral nerve injury. The median nerve appears to be the one most frequently affected in the lower limb, and the internal popliteal in the lower. They report three cases, two of the median nerve and one of the internal popliteal, treated by injections of 60 per cent. alcohol. All three patients experienced almost immediate relief from pain; the ulcers and chaffed bleeding areas healed rapidly, and the paralysis resulting from the injections was temporary. Early use of the muscles of the extremity affected prevented the development of contractures and atrophy. In some cases 60 per cent. alcohol seems to interrupt the conduction of sensory impulses, but not to interfere with the transmission of motor impulses. The nerves affected should be exposed under general anæsthesia, and the injection should be made above the wound or site of the injury; for in those cases in which the injection was made below, the results were only temporary. From 1 to 2 c.cs. of 60 per cent. alcohol should be injected; as this is done, the nerve swells and becomes white. This treatment was originally suggested by Sicard, and where the nerves are bound or caught in scar tissue, it should be combined with the operation of neurolysis, which, by itself does not control the pain in many cases, and even in those cases in which there is some relief, it is but temporary.

R. A. Stoney.

ENGLEMANN: *Congenital Hip Dislocation.* "Wien. Klin. Wchschr." July, 1919. 27, 703-712.

OF 27 cases treated by the Lorenz method in Fraenkel's Clinic, 11 returned last summer for re-examination, at periods varying from 6 to 14 years after treatment. All were girls. One had had a bilateral deformity; the others a unilateral, 7 left-sided and 3 right-sided. In 6 cases the end-result was perfect; 2 had a good functional result, despite a persistent partial luxation: in another case with excellent functional result, the *x*-ray demonstrated a coxa vara on the affected side; the tenth case, in which the original lesion was bilateral, gave a perfect end-result, reposition in each hip having been established with a year's interval between the two operations. One case was a total failure—here congenital talipes equinovarus and spastic paraplegia were associated with the hip deformity. Excellent *x*-ray tracings and photographs demonstrate the course of each case.

Englemann holds, with Hoffa, that the ætiology of the condition is rather to be sought in an error of primary development (vitium primae formationis) than in the Lorenz view of intra-uterine pressure: in support of his conclusion he mentions the following observations:—1. A family tendency is not infrequently met with; 2. other deformities, such as club-foot, spina bifida, cleft palate, &c., are frequent associated lesions; 3. in all his cases there was present a distinct hypoplasia of the pelvic girdle on the affected side. On this latter factor, and, in particularly the acetabular formation, the prognosis largely depends. For reposition, the Lorenz technique is used throughout; the adductors are spared as much as possible; fixation in plaster in the abduction-flexion position is maintained after reposition: the duration of this fixation varies in individual cases; shrinkage of the capsule plays an important part in the maintenance of a successful reposition.

A coxa vara on the corrected side may result as a sequela of reposition. This phenomenon is doubtless due to epiphyseal trauma during reduction. In untreated unilateral cases a coxa vara sometimes develops on the unaffected side. Englemann looks on this as a compensatory effort of Nature to keep both trochanters on the same level, and quotes Blum's researches on this phenomenon, showing that the unequal distribution of the pelvic weight tends to produce a driving down of the femoral head on the opposite side. A rachitic element is also to be considered in these cases.

Diagnosis is to be made as early as possible: any asymmetry of the inguinal, adductor, or gluteal folds should draw attention to the condition even before the child has started to walk. Reposition should be undertaken once diagnosis has been confirmed

by *x*-ray. The earlier it is attempted the more easily it is effected, and the sooner the femoral head commences to mould the acetabulum the more likely is the pelvis to take on normal growth.

WILLIAM DOOLIN.

TUBBY, A. H.: *Congenital Dislocation of the Hip: Note on a Method of Dealing with Refractory Cases.* "Lancet," December 20th, 1919. P. 1135.

TUBBY finds that with increasing age the ilio-psoas tendon becomes the chief cause of difficulty in reducing congenital luxations of the hip. Normally the tendon crosses the femoral head, but after luxation it passes across the empty portion of the capsule, which it constricts, and thus gives rise to an "hour-glass" condition. At the point of constriction a perforated diaphragm is formed, which, as age advances, becomes rigid and resists the reposition of the femoral head. After a thorough trial of bloodless methods, Tubby makes a 5-inch incision downwards and inwards from the anterior inferior iliac spine. He separates the sartorius from the tensor fasciæ femoris, cutting the latter muscle if necessary. The exposed hour-glass capsule is then opened external to the constriction by a crucial incision over the femoral head, which is everted to allow inspection of the button-hole aperture that leads into the acetabulum. The constriction of the capsule and the ilio-psoas tendon are divided with a hernia knife, and with traction on the limb, the caput femoris slips into its socket. The crucial incision is sutured, and the limb, in full abduction, is immobilised in plaster.

A. K. H.

PROPPING: *The Snapping Hip.* "Dtsch. Ztschr. f. Chir." Feb., 1919. P. 251.

THIS rare abnormality—Ebner, in 1912, was able to find only 29 cases recorded—was first demonstrated by Perrin before the Surgical Society of Paris, in 1859. Propping now gives a detailed account of two new cases, with a critical *résumé* of the literature on the subject.

In each of his cases there was a definite history of injury in the trochanteric area. Shortly after the reception of the injury, the patient noticed that on walking, a "swelling," which snapped, or clicked, on walking, appeared in the trochanter region. As the condition is a painful one, it is liable to interfere with a man's military capacity. What this swelling is, whence, and why it arises, has been the source of much speculation. The condition may be voluntarily elicited in affected subjects by the following procedure:—The patient throws all the body weight on to the affected leg, the pelvis being let sink to the healthy side; with the knee extended, a moderate degree of flexion at the hip (10

degrees) tends to push the pelvis as a whole backwards: once this attitude is assumed (Schnapphaltung), a visible, palpable strand appears behind the trochanter, which can be made to pass forwards and backwards across the trochanter surface, each such motion being accompanied by an audible snap, or click. Manual fixation of the mass behind the trochanter prevents the production of the click. In the prone position, the phenomenon is capable of being produced passively, but much less audibly. The gluteal musculature is intact. No dislocation of the femoral head from the acetabulum is present. In Propping's second case the patient was a decidedly hysterical subject.

A detailed comparison of his cases with others already on record, and a series of dissecting room investigations, show that the mass which appears is a specialised portion of the upper iliotibial tract. To this specialised portion Berth has given the name "tractus cristofemoralis." This band has its origin from the crest of the ilium near the anterior superior spine, continues backwards in the fascia of the gluteus medius, and runs down between the gluteus maximus and tensor fasciæ latæ, to become incorporated in the strong outer portion of the deep fascia of the thigh, and to the posterior border of the iliotibial band. With the lower limb in fullest extension, this band lies behind the trochanter: flexion at the hip causes it to slide forwards across the trochanter; resumption of hip extension causes it to glide back: either motion singly, or both, may be accompanied by the audible click.

Propping's cases would indicate the following ætiology—the original injury leads to an ossifying periostitis at the trochanteric border; this roughness arrests the smooth forward passage of the band across the trochanter up to a certain point of tension, when it is "let fly" in a manner comparable to that of a bow string. With the myogenic theory of its causation (contraction of gluteus maximus) Propping does not agree. Any hysterical tendency on the part of the patient will tend to the exaggeration of the phenomenon, by the voluntary assumption of the hip attitude, in an effort either to obtain sympathy or avoid service.

Operative treatment consists in open division of the upper tendinous portion of the iliotibial tract.

WILLIAM DOOLIN.

McCLURE, C. R.: "*Köhler's Disease*"—*Isolated Disease of the Tarsal Scaphoid.* "Jour. Amer. Med. Assoc." October 26, 1918

COCKAYNE: *Isolated Disease of Tarsal Scaphoid (Köhler's Disease)* "Lancet," December 13, 1919. P. 1086.

MAYNARD HEATH: *Isolated Disease of Tarsal Scaphoid (Köhler's Disease).* "Lancet," November 8th, 1919. P. 832.

KÖHLER first described three cases of this condition in 1908. In the papers, under review, the patients are aged seven or under.

and all came to be treated for lameness in one foot following slight trauma. Examination of the foot revealed swelling of the dorsum and inner aspect, most marked over the scaphoid, with abduction of the whole foot. Pain and tenderness were absent or very slight. On *x*-ray examination the scaphoid was seen to be small, dense, of irregular outline, and with its architecture obscured owing to the absence of differentiation between the cortex and spongy bone. Treatment consisted in immobilising the foot in the corrected position by means of a plaster cast. At the end of six months the function of the foot was normal, and *x*-ray showed the bone to be almost perfect. The ætiology of this condition is still unsettled, but most authorities agree that it is not tuberculous.

C. J. MacAuley.

Cotton, F. J.: "*Flat-foot*" *and other Static Foot Troubles.* "Boston Med. and Surg. Jour." Vol. CLXXXII. No. 1. 1920.

Cotton discusses the origin and treatment of common foot troubles under the following heads:—

I. *Flat-foot.*—(*a*) *Habitual Flat-foot.*—The normal movements of the foot are those of pronation and supination which take place at the subastragaloid joint. The position of relaxation of the foot is that of pronation. The habitual assumption of this position results in the flat foot of adolescence—*i.e.*, the habitually pronated foot. The primary cause is defective tone in the muscles whose tendons run beneath the internal malleolus—*i.e.*, tibialis posticus and flexor longus hallucis and longus digitorum. Treatment by rest, strapping, correctly-made boots and mechanical supports will alleviate the symptoms, but permanent cure can only be achieved by exercises designed to restore tone in the affected muscles. In young persons who co-operate in the treatment, restoration of the normal balance of the foot may be confidently expected.

(*b*) *Rigid Flat-foot.*—The foot is held in fixed pronation by spasm, mainly, of the peronei. If the spasm does not disappear after a few days' rest in bed, anæsthetic reduction should be carried out, and the foot fixed in inversion by a plaster cast. In a week treatment may be instituted on the usual lines. Tenotomy is unnecessary.

(*c*) *Bony Flat-foot.*—Cure can be effected only by operation, preferably cuneiform resection.

II. *Short Heel-cord.*—In these cases, nearly always women, there is limitation of the normal range of dorsi-flexion due to the wearing of high-heel shoes. Symptoms appear with the use of flat-heel shoes or slippers. Massage of the calf-muscles to stretch the heel tendon results usually in a "weak" foot, which must be

treated *secundum artem*. Otherwise, comfort is only possible in the original faulty shoes.

III. *Contracted Foot.*—This is probably a congenital condition which may be aggravated by trauma. Tenotomy of the shortened structures with transplantation of the tendon of the extensor proprius hallucis to the distal end of the first metatarsal will result in practical cure. In two cases of persistent tenderness below the first metatarso-phalangeal joint admirable results were obtained by removing the prominent sesamoids through a lateral incision.

IV. *Anterior Arch Troubles.*—Compression of the foot by shoes with concave soles causes either Morton's disease characterised by pain due to pinching of the nerves, or more commonly results in "fallen" anterior arch. In the latter case, the unequal weight thrown on the heads of the second and third metatarsals produces a tender bunion on the sole, with a dull ache of the fore part of the foot. These cases can only be relieved by transferring the weight to parts of the foot which are able to bear it without pain. This may be effected by Jones' bar or Morton's cuff with pad, behind the metatarsal heads. In some cases a flat, solid shoe, rather snug-fitting, is sufficient.

V. *Hallux Valgus.*—Once established, hallux-valgus is amenable only to operation. The ideal operation—that of R. F. Weir—is not commonly done. The usual operation—remodelling the joint with excision of the bursa—is unsatisfactory unless the external part of the joint capsule is divided at the same time and the tendon of the extensor proprius hallucis either hooped or transplanted to the first phalanx. An alternative is cuneiform osteotomy of the metatarsal head with excision of the bursa. The great danger is sepsis.

VI.—*Hallux Rigidus.*—Can be corrected only by operation, but sufficient relief can often be obtained by heavy, stiff soles.

Apropos of shoes and static foot troubles—the serviceable shoe for ordinary work-a-day purposes is one with a straight inside line, room for the toes, and a firm clasp of heel and instep.

C. J. MacAulay.

Ludington, N. A.: *Hammer-toes.* "Medical Record." Vol. 96. No. 21. 1919.

The essential factor in this condition is contraction of the ligaments around the joint. Manual correction and wearing a sole-plate will cure early cases. In more severe cases subcutaneous division of the lateral and capsular ligaments will be needed; while complete resection of the joint by lateral incisions is reserved for the worst cases where other methods have failed.

Amputation is unnecessary and harmful.

C. J. MacAulay.

NEUMANN AND SUTER: *A Contribution to the Study of König's Osteochondritis Dissecans.* "Dtsch. Ztschr. f. Chir." Sept., 1918. P. 219.

THE origin of loose bodies (Gelenkmaüser) in joints has long been a source of pathological strife. In 1887, König first described a process of slow, dry necrosis of cartilage, which ultimately led to the shedding of cartilaginous sequestra into the joint cavity. Whilst not denying the possibility that this osteochondritis dissecans might be of traumatic origin, he was rather inclined to the belief that the process was an individual one, of unknown ætiology. His conclusions were most vigorously combated by Barth (1896), who looked on all loose bodies as of direct traumatic origin, portions of articular cartilage being torn off by ligamentous attachments during severe wrenching movements of joints. Other later investigators held varying theories as to the ætiology of the condition. Lexer inclined to the view of subchondral hæmatoma formation of traumatic origin: Axhausen (1914) considers König's osteochondritis and arthritis deformans to be but different phases of the same disease.

Neumann and Suter here publish a detailed account of two cases, as a contribution to the study of the question. In neither case was there any history of injury: in both, the process began gradually in the medial femoral condyle: in one case the condition was bilateral. Each case had been treated for long periods as "rheumatism," but with no improvement. Ultimately, *x*-ray examination showed the presence of pathological change on the condylar surface, with shadows of free bodies within the joint. The second patient, unfortunately, declined operation, but the *x*-ray findings in each case bore a striking similarity.

In the first case, operation was consented to. The direct operative examination confirmed in detail the *x*-ray diagnosis. Both knees were explored; free bodies were found, and corresponding sites of origin were manifest on the condylar surface. These cartilaginous "ulcerated" areas were lined with granulation tissue growing up from the subjacent bone. Histological examination of the loose bodies subsequently determined the following findings:—The cartilaginous covering was living and healthy, with good nuclear staining; beneath this, the bony layer was definitely necrotic, nuclear staining being practically absent. These findings lead the authors to the conclusion that König's osteochondritis dissecans is an actual clinical entity, and may arise without traumatic origin. The ætiology is still obscure; it is not a primary necrosis of cartilage. The presence of a joint-mouse or loose body may thus be due to a pathological process in bone taking place beneath living articular cartilage. The removal of the loose body by operation affords the patient no guarantee against a continuation of the process, with further shedding of loose bodies into the joint. The osteochon-

dritic process may be diagnosed by *x*-ray prior to the actual shedding of cartilage islands, and thus the later existence of loose bodies may be forecast. The authors do not agree with Axhausen that osteochondritis dissecans and arthritis deformans are the same disease.

WILLIAM DOOLIN.

IRWIN, S. T.: *The End-results in Partial Amputation of the Foot.* "Brit. Jour. Surg." January, 1920. Pp. 327-334.

IN his work at the limbless department of U. V. F Hospital, Belfast, Irwin has been impressed by the difficulty in fitting a prothesis in cases of partial foot-amputation. He finds that although at first the results of these amputations appear excellent, they are, in the end, disappointing. The anterior pillar of the longitudinal arch of the foot is shortened, allowing the anterior end of the os calcis to dip. Under the action of a couple due to the body weighing downwards on this anterior end and to the upward pull of the tendo achillis on the heel, a tendency to equinus is produced which no apparatus satisfactorily corrects. The shorter the anterior limb of the longitudinal arch, the worse is the functional result.

He finds that Syme's amputation through the ankle-joint gives a better result than Lisfranc's, through the tarso-metatarsal articulations, and a much better result than Chopart's through the mid-tarsal joint. After Lisfranc's amputation the tibial and peroneal muscles contract in an effort to restore the fallen arch. This contraction becomes spastic and painful, and a spasmotic inversion of the foot results. The body weight is then borne on the cuboid, and in old-standing cases a bunion may develop over the bone.

Chopart's amputation gives rise to even greater functional incapacity than Lisfranc's: the resulting scar becomes terminal and subject to pressure. The foot has an especial tendency to the equinus position, and the protheses devised for this amputation are difficult to keep in repair.

Irwin concludes that unless some part of the foot distal to the tarso-metatarsal (Lisfranc's) joint can be preserved, it is better to perform Syme's amputation through the ankle.

A. K. H.

SURGERY OF THE BRAIN AND CORD.

ADSON, A. W.: *Cutting the Sensory Root of the Gasserian Ganglion for the Relief of Trifacial Neuralgia.* "Surg. Gyn. Obst." Vol. XXIX. No. 4. P. 334.

THE genuine case of trifacial neuralgia is not permanently relieved by any procedures directed to the peripheral branches of the fifth nerve. Injection of alcohol into the nerve trunks as

they issue from the skull will give relief for a period of eight or nine months, but absolute immunity from pain is difficult to attain, and a second injection commonly fails to produce the good effect of the first. Injection into the ganglion itself is not only difficult, but dangerous, for the injection, if not carefully controlled, may travel into the pons. Hærtel reported eye complications in 25 per cent. of the cases in which he injected the ganglion. There is less risk in the radical operation than in ganglionic injections. Avulsion or excision of the peripheral branches is less effective than alcoholic injections. The usual operations for the removal of the ganglion have been followed by complications which, with their causes, can be tabulated as follows :—

Complication.	Cause.
Paralysis of frontal branch of 7th nerve.	Division of branch in skin incision.
Hæmorrhage.	Injury to middle meningeal and cavernous sinus.
Paralysis, 3rd, 4th, and 6th nerves.	Pressure by retractor or by gauze introduced to stop hæmorrhage.
Paralysis, 7th nerve.	Avulsion of root of fifth causes small hæmorrhages and œdema of pons.
Conjunctivitis and corneal ulcers.	Dryness of cornea due to inability to close eyelids if 7th
Interstitial keratitis	paralysed, or division of trophic nerves in the ophthalmic division of the fifth, or pressure by gauze packs on ganglion.

Frazier, in 1901, attempted to avoid these untoward results by exposing the root of the ganglion and avulsing it, leaving the ganglion intact. His method had much success. Adson, however, found that occasional facial paralysis followed this operation in about five days, and lasted for about six weeks, when it gradually disappeared. He, therefore, devised a guillotine knife to divide the root without avulsion, and since he adopted this method no cases of paralysis of the seventh nerve occurred.

He operates as follows :—The incision begins above and behind the external angle of the orbit, and follows the curve of a question mark to a point below the zygoma immediately in front of the ear. The skin flap is turned forward, and a flap of the temporal fascia backwards. The temporal muscle is split, and a sub-temporal decompression performed : an area of bone 3 cm. by 3 cm.

is removed. The dura is elevated from the middle cranial fossa until the middle meningeal artery is exposed; this vessel is ligatured, and the foramen spinosum plugged with wax. The elevation of the dura continues till the posterior margin of the mandibular division appears. Dissection is then carried posteriorly along the posterior margin of the ganglion till the region of the root is reached. All bleeding is controlled, and a retractor carrying an electric bulb elevates the dura and illuminates the field of operation. The dura over the root is incised, and the nerve fibres are exposed; the guillotine knife is then slipped over them, and they are cut. The proximal end of the root is pushed through the dural aperture into the posterior cranial fossa, and the aperture itself is plugged with muscle. This plug prevents loss of cerebro-spinal fluid after the operation, and serves to keep the divided ends of the nerves apart.

The wound is closed in layers. If any bleeding is anticipated, a gauze strip is left in for three days.

After operation a shield is placed over the eye, and at the end of ten days is exchanged for close-fitting automobile goggles to be used when the patient is exposed to dust or wind. Diurnal irrigations of the conjunctiva with 2 per cent. boric acid solution are advised

ADAMS A. MCCONNELL.

EASTMAN, J. R.: *Operative Technic in Spina Bifida.* "Jour. Amer. Med. Assoc." Vol. 74. No. 3. P. 156.

OPERATION is indicated in all cases of meningocele which are not associated with hydrocephalus or paralysis of the lower limbs. The author emphasises the importance of two technical details. First, the prevention of loss of cerebro-spinal fluid on opening the sac, and second, the prevention of infection. The application of a light rubber-covered clamp to the isolated neck of the sac serves the former purpose, while the careful preliminary suture of rubber-dam to the skin below the tumour and the subsequent sealing of the whole area with collodion and gauze fulfil the latter indication

ADAMS A. MCCONNELL.

SURGERY OF THE UROGENITAL SYSTEM.

BUMPUS, H. C.: *Diverticula of the Posterior Urethra.* "Surg. Gyn. Obst." Vol. XXIX. No. 4. P. 388.

DIVERTICULA of the posterior urethra have not been frequently recognised, as up to 1917 but 72 cases have been reported. Congenital diverticula have been described in the anterior urethra, but the acquired type in the posterior part of the canal are much more common. They may arise from dilatation of the urethra due to urethral calculus, or to distension behind a stricture. On

the other hand, they may be secondary to injuries of the urethra, or rupture of abscesses or cysts into the urethra. In three of the author's cases the diverticulum resulted from perineal operations, and in two from spontaneous drainage of abscesses into the urethra. The proximity of a septic diverticulum to the vesical sphincters produces dribbling or complete incontinence, while the constant leakage of purulent material into the urethra keeps up a posterior urethritis with symptoms of pain and tenesmus. Urine has a tendency to lodge in the diverticulum, and causes a constant perineal discomfort. Pus is usually present in the urine.

Cystoscopic examination often reveals a normal bladder, and it is only on careful examination of the posterior urethra with the urethroscope that the diverticula are discovered.

The author emphasises the importance of such examination when dysuria, incontinence, perineal pain, and pyuria persist or recur after a perineal operation or after urethral inflammation. [A water-dilating urethroscope with a close-vision lens system gives the most satisfactory view of the posterior urethra. It is unfortunate that the author does not indicate the method of treatment adopted.]

ADAMS A. MCCONNELL.

THOMAS, B. A.: *Treatment of Bladder Growths by Electricity.* "New York Med. Jour." Vol. CX. No. 21. P. 833.

THE greatest impediment to the efficient treatment of vesical growths is the delay in making a cystoscopic examination. Of 54 cases the author found that 36 had been under medical treatment for months or years in spite of such symptoms as hæmaturia, pyuria, frequent and painful micturition. Absolute diagnosis of the presence of a growth can be made, and a fairly accurate idea of its nature can be gained by cystoscopy. The treatment is electrical or surgical according to the nature of the growth. Excision of papillomata is so often followed by recurrent growths that the high frequency current, which affords a lower ratio of recurrence and a greater facility of treating these tumours, is taking the place of incisional treatment.

Radical removal is the only treatment of malignant tumours if local and general conditions permit. (The author, in this paper, does not state how the diagnosis between benign and malignant tumours is made.) The treatment is outlined as follows in the different types of growth:—

(1) Papillomata, single or multiple, are destroyed by the high frequency current. In some cases radium is used in the hope that the deeper penetration of its rays may prevent recurrence. Comparative results of treatment by the current alone, and by the current combined with radium, are not yet available.

(2) Early, small malignant tumours may possibly be treated by

cystotomy and fulguration or electric cautery followed by implantation of radium into the tumour-bed.

(3) Malignant and favourably situated growths should be resected, and the ureters implanted into another part of the bladder if necessary. If the vesical sphincter is involved, and the condition of the patient permits, total cystectomy preceded by bilateral nephrostomy is justifiable. X-rays should be used after operation.

(4) Inoperable malignant growths may be treated by cystotomy and fulguration, followed by radium and *x*-rays. If metastases are present, or if the patient will not stand even a cystotomy, radium applied per rectum and per urethram, and *x*-rays, may alleviate the condition.

Nineteen cases of papilloma were treated by the high frequency current. The number of treatments necessary to destroy the growths varied from one to nineteen. In about fifty per cent. some recurrence took place and entailed further fulguration. Three polypi and one hæmangioma were treated by the same method with complete success. Four cases of cancer showed no improvement when subjected to fulguration.

Total cystectomy was performed successfully in one patient.

Out of 54 cases, 30 were cured temporarily or permanently. Of these, 21 were cases of papillomata, four of polypi, and one each of cancer, leiomyoma and hæmangioma.

In three fatal cases of cancer, previous operations for papillomata had been performed.

ADAMS A. MCCONNELL.

PIGNATTI, A.: *Experimental Ligation of the Ureter.* "Policlinico, Rome." July, 1919. 26. P. 231.

WHEN the ureter is ligatured hydronephrosis usually results. The author found that after ligation, such a result was retarded by nephrotomy, and absolutely prevented by a combination of nephrotomy and decapsulation. When these measures were carried out no atrophy of the renal tissue took place. When the ureter becomes irremediably obstructed in the human subject these observations indicate that nephrectomy is unwarranted.

ADAMS A. MCCONNELL.

YOUNG, H. H.; WHITE, E. C.; SWARTZ, E. O.: *A New Germicide for Use in the Genito-Urinary Tract*: "*Mercurochrome*—220." "Jour. of the Amer. Med. Assoc." Vol. 73. No. 20. P. 1483.

THE authors having noted the good results attending the treatment of arthritis by Browning's acriflavine, decided to use a penetrating dye, not necessarily a germicide of itself, but merely a carrier in which a germicidal chemical group could be substituted. In

synthesizing the drugs, they aimed at: (1) ready penetration of the infected tissues; (2) lack of irritation to the tissues; (3) high germicidal activity; (4) ready solubility in water and stability of the solution; (5) freedom from precipitation in urine; and (6) sufficiently low toxicity to avoid systemic effects from absorption.

They decided to use an acid dye as the carrier, as its solution would have a neutral or slightly alkaline reaction, and, therefore, be less irritating to the tissues than the acid solution of a basic dye. Eosin suggested itself because of its penetrating qualities, but those positions in its molecule susceptible to substitution are already occupied by bromin. They chose, therefore, the closely related substance dibromfluorescein, as it could undergo substitution by the germicidal group and still retain practically the same penetrating properties as eosin. Mercury was chosen as the germicidal principle to be substituted in the dye-molecule. The irritating effects of solution of mercuric chlorid is due to the mercury *ion*. If the metal is substituted in an organic compound it no longer yields ions, but exists as a firmly bound part of the dye-molecule itself. To the substance obtained by substituting one atom of mercury in the molecule of dibromfluorescein the name "mercurochrome—220" was given. Chemically it is dibromoxymercuryfluorescein, or its sodium salt. The latter contains about 26 per cent. of mercury. The free acid is a red powder, insoluble in water, but readily soluble in sodium hydroxide solution, with the formation of a deep cherry-red colour, showing fluoresence on dilution. The solution is stable, and is not affected by moderate heat or exposure to the air. There is no precipitation when a 1 per cent. solution is mixed with an equal volume of a medium rich in protein, such as hydrocele fluid. The solution stains the skin a bright red colour, but the stain is readily removed by rubbing with 2 per cent. potassium permanganate, followed by 2 per cent. oxalic acid solution.

A rabbit's bladder was injected through the urethra with one ounce of a 1 per cent. solution, which was allowed to remain for five minutes. The bladder was then emptied, and the animal killed. On cutting sections of the vesical and urethral walls it was found that the epithelial cells were stained a deep red. The staining was most intense in the superficial layers, but the submucosa was stained in places, though not uniformly. In some places the muscularis showed the dye. The epithelium of the glands opening into the urethra was stained some distance from the mouth of the ducts. Similar experiments on the ureter and renal pelvis gave similar results, all showing that considerable penetration takes place. That the toxicity of the drug is slight can be seen by the fact that dogs tolerated 10 mg. per kilogram with no evidence of discomfort or illness. Solutions varying from 1 per cent. in the renal pelvis to 5 per cent. in the urethra have been retained without causing irritation, though temporary smarting at the time of injection has been noted.

With regard to the germicidal value of the drug, it kills *B. coli* or *Staph. aureus* in one minute in a dilution of 1 in 1,000 in urine. In fifteen minutes its effect is nearly as great as in twenty-four hours, killing *B. coli* at 1 in 5,000 and *Staph. aureus* at 1 in 10,000. That the germicidal effect is not produced only *in vitro*, but is obvious *in vivo*, is evident from the results obtained in a series of cases of urethritis, cystitis and pyelitis, in which rapid sterilization was secured after other drugs had been used in vain. Mercurochrome—220 has proved to be eminently satisfactory in the treatment of chancroids and as a dressing for bubos after incision.

The method adopted in the treatment of urethritis was as follows:—After diagnosis of the nature and site of infection an anterior urethral irrigation of potassium permanganate (1 in 10,000) solution was given. This was followed by the injection of sufficient 1 per cent. solution of mercurochrome—220 to fill the anterior urethra. The fluid was retained for five minutes. If the posterior urethra was involved the solution was gently forced into the posterior urethra and retained for an hour or more. The patient was instructed to inject the solution four times a day at first. The average time required to render the discharge free from gonococci was ten days.

ADAMS A. McCONNELL.

BLEIFELD, W. T.: *Vas Puncture in Acute Gonorrhœa.* "Jour. Amer. Med. Assoc." Vol. 74. No. 3. P. 148.

THE author believes that the term "urethritis" implies a faulty conception of the extent of infection in gonorrhœa, for in about 50 per cent. of cases the seminal vesicles are involved within the first month. Practitioners realise the importance of treating the urethritis and epididymitis, but ignore inflammation in the intermediate segments of the genital tract. Injection of the vesicles through the vas deferens with a 5 per cent. solution of collargol will eliminate infection from these cavities, and will prevent chronic inflammation and epididymitis. The urethra must always be treated whatever measures are adopted for the vesiculitis.

The technique of puncture of the vas deferens is given. Only those familiar with the technique should practice injection, but there is no doubt that vas puncture is an efficient method of treatment.

ADAMS A. McCONNELL.

SURGERY OF THE VASCULAR SYSTEM.

HANDLEY, W. SAMPSON: *Note on the "Monobloc" Treatment of Tuberculous Lymphangitis, with an illustrative case.* "Brit. Jour. Surg." January, 1920. Pp. 324-326.

HANDLEY thinks that in tuberculous lymphangitis a systematic

" monobloc " removal of the affected tissues is just as important as in the closely analagous case of cancer. The skin incision should be of the length of the affected lymphatic cords, and a strip of underlying deep fascia one inch wide should be included in the excision. He describes a case of dry warty lupus of the knuckle, with lymphangitis extending to the axilla. The lymphatic tract was dotted with tubercular nodules, some of which were not adherent to the skin.

A " monobloc " removal of the infected tissues was performed through a 25-inch cut. Two months later a small abscess over the biceps required excision, and a year after operation there was recurrence of the warty growth over the knuckle. This lupoid patch was excised, and the area grafted from the thigh. Handley is convinced that lupus vulgaris is essentially and primarily a lymphangitis of the cutaneous and subcutaneous lymphatics, differing only from " tuberculous lymphangitis " in its slow and limited spread through the lymphatics. The reasons for his belief are that (1) The plane primarily affected is the superficial layer of the dermis : this is the plane of origin of the skin-lymphatics. (2) Changes in the lymphatic vessels can be seen beyond the clinical edge of the lupoid area. (3) Giant-cell systems can be found not only in the skin, but in the subcutaneous tissues close to blood-vessels and in the situation of the comitant lymphatics.

A. K. H.

Fraser, J. : *The Hæmangioma Group of Endotheliblastomata.* " Brit. Jour. Surg." January, 1920. Pp. 335-342.

Fraser thinks that the hæmangiomata are not sufficiently recognised as definite tumours with a constant tendency to infiltrate and occasionally giving rise to metastasis. As there is confusion in the existing terminology, he suggests that the term " hæmangioma " should be limited to tumours in which there is an actual new formation of vessels or a proliferation of vessel walls, and where the characteristic cells are endothelial. The nævi or melanomata, on the other hand, are epidermal in origin.

In all the hæmangiomata the endothelium is capillary in type; these tumours, therefore, should not be classified as venous and arterial. Fraser suggests an histological classification depending upon the density of the tumour, which may be capillary, cavernous, or compact.

The hæmangiomata are congenital in origin : in all probability they are formed from " rests " of the mesodermal area in the embryo from which the vascular system develops.

Fraser thinks that multiple angiomata—Morgan's spots—which appear after middle age are due to degenerative changes in the capillary wall.

The endothelial rests proliferate : vacuolation occurs; the cells

become arranged round the vacuoles, and thus embryonic vessels are formed. The endothelial walls proliferate in turn, and the process is repeated. These tumours have a natural tendency to cure which depends upon a deficient and diminishing blood-supply. They are, however, capable of extensive spread, especially in subcutaneous tissue, where the tumour extends between the individual fat-cells, and in nerves, where it separates the fibres after invading the sheath. Infiltration takes place by endothelial proliferation followed by subsequent vacuolisation. Cavernous hæmangiomata result when the embryonic capillary tissue develops in direct continuity with the vascular system. Compact hæmangiomata arise when the cells of a capillary tumour actively proliferate either around or into the lumen of the embryonic capillaries. This type of hæmangioma rarely infiltrates.

[The writer has seen a case of recurring hæmangioma of the breast with metastasis in the skin, lungs, liver and ovaries. Microscopically, these tumours resembled cavernous tissue.—A. K. H.]

Braithwaite. L. R. : *Excision of a Subclavian Aneurysm.* "Brit. Jour. Surg." January, 1920. Pp. 390-393.

This paper reports a successful case of an operation which has very rarely been performed. The author was only able to find three other recorded examples, one of which died.

Through a curved incision with its convexity downwards, a flap of skin and platysma was turned up, freely exposing the clavicle. Most of the clavicular head of the sternomastoid was divided. Holes were bored in the clavicle to permit of subsequent suture. It was then divided in two places, and rather more than the middle two-fourths with the attached pectoral fibres turned down upon the chest. The enlarged transversalis colli and supra-scapular arteries crossing the sac were preserved. Above, the sac was adherent to the brachial plexus; internally, to the scalenus anticus; below, it had partly eroded the first rib, and was torn at this point by the passage of an aneurysm needle.

A finger introduced into the sac blocked the proximal arterial stoma, and the second stage of the subclavian then was caught in a clamp. The entire sac was removed. Three weeks after operation the pain which the patient had complained of in his thumb, index, middle and ring fingers had vanished, and six years later—December, 1919—he was still pursuing his occupation of coal-mining. The failure of the mobilised clavicular segment to consolidate was the only blemish in an otherwise perfect result.

A. K. H.

Schirmer, A.: *On Subcutaneous Retro-peritoneal Drainage of Ascites.* "Corropondentz-Blatt für Schweizeraertze (Bâle). Vol. XLIX. No. 3,911. September, 1919.

A. Schirmer reports a case operated by Tavel in 1910, in which an ascites in a girl aged fourteen was drained into the sub-peritoneal tissues of the anterior abdominal wall by means of a glass tube. After this operation the intra-abdominal collection of fluid appeared to decrease. The subcutaneous cellular tissue of the abdominal wall became infiltrated and œdematous. Later, large pouches of skin appeared and hung down like bladders over the pubes and thighs. In 1918, eight years after the first operation, Henschen resected these pouches, which were full of yellow ascitic fluid, and found an aperture in the linea alba of the diameter of two francs. This was closed. A second operation was necessitated by sloughing of the skin. In August, 1919, the abdominal wall was "fairly presentable," and without trace of subcutaneous infiltration. On the other hand, percussion revealed some slight ascites. Schirmer concludes that this case should be kept in mind when draining an ascites into the subcutaneous and sub-peritoneal tissues.

A. K. H.

OBITUARY

BATTERSBY, HENRY LEWIS. Died February 12, 1920. Born September 7, 1853. Educated at R.C.S.I., L.R.C.S.I., 1878; L.R.C.P.I., 1879. Surgeon-Captain, March 6, 1880; Surgeon-Major, March 6, 1892; Lt.-Colonel, March 6, 1900. Retired September 7, 1908; Brevet-Col., August 8, 1917. Served in South Africa, 1899-1900; re-employed during war from March 17, 1915. Died from pneumonia in London.

CLARE, HENRY LEWIS. Died January 24, 1920. Born in Dublin January 29, 1858. Educated in Trinity College, Dublin; B.A., 1879; M.B. M.Ch., 1880; M.D., 1897; D.P.H., R.C.P. & S.I., 1897; appointed Surgeon-General and Chief Medical Officer of Trinidad and Irtryo in 1907. Died at Bournemouth.

CLERY, JAMES ALBERT. Died February 10, 1920. Born December 21, 1846. Educated Trinity College, Dublin; B.A., 1868; M.B., M.Ch., 1870; Assistant-Surgeon, Army, April 1, 1871; Surgeon-Major, 1883; Surgeon-Lt.-Colonel, 1891; Colonel, 1899; Surgeon-General, 1902. Served in Soudan, 1884-1885, 1898; South Africa, 1899-1902. Retired, 1906. Re-employed during the war from 1915. C.B., Military, 1901. Died at Blackheath, London.

DUNN, EDWIN LINDSAY. Died January 22, 1920. Born in 1865. Educated at Steevens' Hospital and Trinity College, Dublin; B.A., M.B., B.Ch., 1887; Medical Superintendent, Berkshire Asylum, Wallingford. Died at Wallingford.

HICKS, GEORGE ADAMS. Died January 24, 1920. Born in County Sligo, 1877. Educated at Queen's College, Belfast; M.B., B.Ch., B.A.O., 1897; M.D., 1904, R.U.I.; F.R.C.S. Edin., 1912; Surgeon to the Samaritan Hospital for Women, Belfast. Died in Belfast as the result of a wound received during an operation.

KEEGAN, DENIS FRANCIS. Died January 1, 1920. Born December, 1840. Educated at Trinity College, Dublin. M. 1861; F.R.C.S. Eng., 1891; B.A., M.B., 1862; M.D., 1865, Dubl[illegible]; [illegible] I.M.S. 1866. Service, Afghan War, 1879-1880; and present at the battle of Kandahar (Medal, Clasp, and Bronze Star). Retired, Lt.-Colonel, 1894. Died at Killiney, Co. Dublin.

MATURIN JOHN. Died February 5, 1920. Born June 6, 1842. Educated, R.C.S.I., L.R.C.S.I., 1863; L.R.C.P. Edin., 1864;

F.R.C.S.I., 1889; Assistant-Surgeon, Army, 1864; Surgeon-Major, 1876; Brigade-Surgeon Lt.-Colonel, 1890; Surgeon-Colonel, 1895. Service in Ashanti, 1873-1874. Retired 1902. Died at Colchester.

MYLES, WILFRED LEECH. Died February 1, 1920. Born at Birr, 1877. Educated at Trinity College, Dublin; L. Med. & Surg., 1905. In practice in Monmouthshire. Died at Ponthlangraith, Monmouthshire, from septic pneumonia.

O'CONNOR, ARTHUR PATRICK. Died January 25, 1920. Born at Roscommon, August 9, 1856. Educated at R.C.S.I.; L.K.Q.C.P.I., 1879; L. 1879; F.R.C.S.I., 1888; Surgeon-Captain, 1880; Surgeon-Major, 1892; Lt.-Colonel, 1900; Colonel, 1917. Service, Burma, 1885-1886; South Africa, 1899-1902. Retired 1911. C.B., Military, 1901. Re-employed during war from 1915. Died at Twickenham.

THE

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INCLUDING

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FOURTH SERIES. No. 2 APRIL 1920

ORIGINAL COMMUNICATIONS

COMPRESSION NEURITIS DUE TO THE NORMAL FIRST DORSAL RIB.[a]

By SIR W. I. de C. WHEELER, M.D., F.R.C.S.I.

Two cases of compression neuritis, under the care of Sir Harold Stiles, one of which I saw in Edinburgh six years ago, stimulated my interest in a condition which, until recently, has escaped general observation. At first sight the cases appeared to be some form of ulnar nerve neuritis, occurring in adults without trauma, or other obvious reason. On consideration it would have occurred to a surgeon that these patients were probably suffering from the presence believed to be in every respect similar, but my suggestion of a cervical rib, but *x*-ray examination gave a negative result.

[a] Read before the Section of Surgery of the Royal Academy of Medicine in Ireland, January 30, 1920.

During the last few years I saw two cases which I that the condition might be relieved by operation was at variance with the opinion of those who had been previously consulted, and I was left with a polite indication from the patients that the activities of surgeons should be placed under some form of legal restraint.

About twelve months ago an athletic clergyman, 35 years of age, presented himself with the following history. He had met with no injury, other than the commonplace falls at football, &c. He had had no illnesses worthy of note, except influenza. But he had noticed for the past four years a gradually increasing loss of grasping power in his right hand. The loss of power began with painful cramps, which he attributed to too much writing. Improvement sometimes followed treatment, then a relapse would occur, and he was worse than before. On waking in the morning the arm would "fall asleep," writing became impossible, and he noticed a gradual wasting of the muscles of the hand. He thought that the first finger and thumb were the worst at first, but subsequently the last three fingers were the most affected. Various doctors were consulted, and he was treated, *inter alia*, for writer's cramp, neuritis, and syringomyelia. He always carried a specially warm glove to protect the affected hand from cold.

On examination it was found that the interossei muscles were practically non-existent, and that there was weakness in the median distribution, as shown by the poor attempts to flex the first finger. An inability to fully extend the wrist and fingers, at the same time pointed to involvement of the musculo-spiral nerve. Generally speaking, the appearance of the hand suggested a mild variety of *main en griffe*. Loss of power was most marked in the area supplied by the ulnar nerve. Sensation appeared normal, except in the ring and little finger, and here it was only slightly altered. He could not tell degrees of hot and cold with the same facility as when the test was applied to the normal hand, and he could appreciate light touches better than pinpricks. Pain, but for the initial cramps some years previously, had been conspicuous by its absence, and in

Skiagram showing the first dorsal rib after resection of the segment causing pressure on the lower brachial trunk. (The arrows indicate the gap left after resection.)

this respect his case differed from others recorded. X-ray photographs demonstrated the absence of cervical rib, and showed a normal thoracic inlet.

During the examination the patient made a statement of great interest, with direct bearing on his condition. He said that the gripping power of his fingers depended

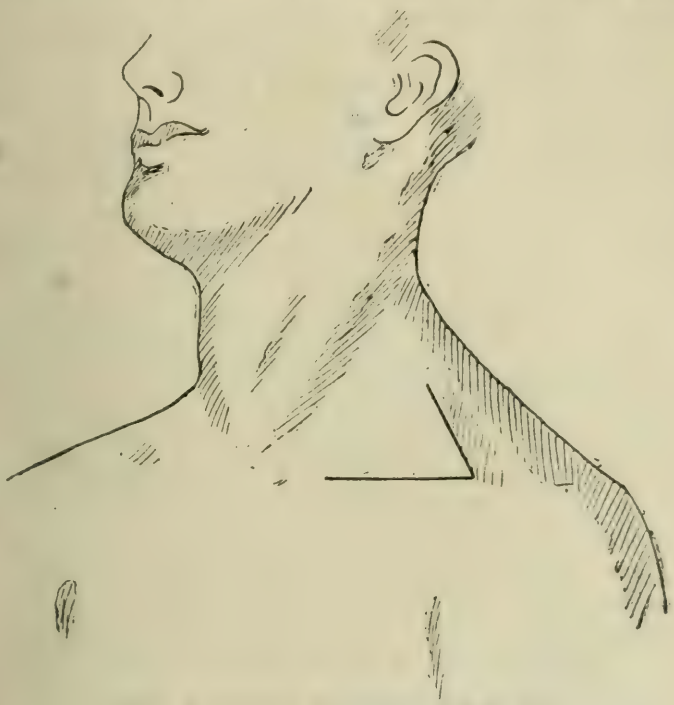

Fig. 1. Incision for removal of first rib.

greatly on the position of the arm. Above his head his power was greatly increased, and he could write on a blackboard steadily, and with ease. Grasping a tea-cup, on the other hand, was almost impossible. On giving him a pen and paper he wrote his name like a man suffering from paralysis agitans; but when the paper was put on the wall above his head the writing was clear and steady.

Treatment by massage, ionisation, hot air baths, &c., was tried for several months. Special attention was given

to the upper fibres of the trapezius, in the hope of increasing the support of the pectoral girdle upwards. There was no lasting improvement in his condition, and a paper published in the *British Journal of Surgery*, by Stopford and Telford, in October, 1919, describing ten consecutive cases of the condition, removed any remaining doubts of the best line of treatment to adopt.

The operation of removal of the first rib is out of the beaten track of most surgeons, and a lively recollection of the anatomy involved called for pause. The experience gained from this case and subsequent operations on the cadaver lead me to think that the operation is not difficult, and may be accomplished with practically no risk.

On January 1st an incision was made above the clavicle, as if for ligature of the subclavian artery; a second limb was added, running parallel to the fibres of the trapezius muscle. (Fig. 1.) A little dissection brought the external jugular vein, the posterior belly of the omo-hyoid, and the nerves of the brachial plexus, crossed by the transversalis coli vein into view. A finger in the wound located the back part of the first rib much higher in the neck than was mentally assumed. The brachial nerves were drawn forwards and downwards, and the interval between the scalenus medius and levator anguli scapulæ muscles defined. The roots of the nerve of Bell in this position were not seen, but their hidden presence was respected. The attachment of the scalenus medius muscle to the first rib was divided subperiosteally, and the inner border of the bone cleared of periosteum and Sibson's fascia. (Fig. 2.) Doyen's rib elevator with cleft palate raspatories were used to bare the underside of the rib, and to separate it from the underlying pleura. The rib was then divided with shears behind the scalenus medius. I felt I could not get far enough forward by dissection from behind, and when the rib was defined I retracted the nerves and other structures back, and cleared the bone between the artery and the lower brachial trunk. The rib was now cut in front of the groove, which is supposed to carry the subclavian artery. (Figs. 3 and 4.) It was noted that the artery did not lie in direct contact with the rib, but the nerve was tightly stretched like a band

across the inner border. At the completion of the operation, when cutting away an irregular point of bone, either the external jugular or subclavian vein was injured. The bleeding was controlled in a moment, and we had the satisfaction of feeling that the bone had been divided well in front of the compression point. The segment of rib removed extended from the posterior edge of the insertion of the scalenus medius to the scalene tubercle, so as to include the

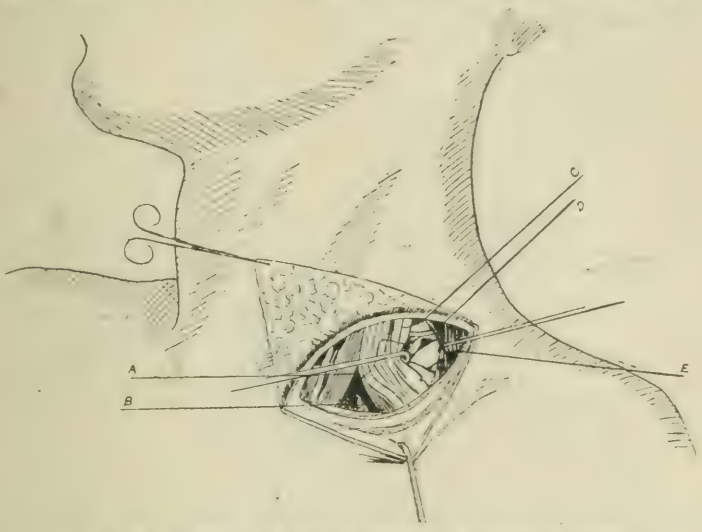

Fig. 2. Exposure of rib behind the brachial plexus.
A. Scalenus anticus. *B*. Subclavian artery. *C*. Plexus retracted. *D*. Levator anguli scapulæ. *E*. Trapezius.

groove for the subclavian artery, and the trunk formed by the eighth cervical and first dorsal nerves. Subperiosteal resection of the first rib may possibly be followed by regeneration of bone, but there are two reasons why a recurrence of compression of the nerve is unlikely :—1st. After removal, the divided ends of the rib fall towards the thorax, and new bone would take a curved direction away from the plexus. 2nd. The periosteum is of necessity stripped from this rib as a sleeve is rolled up, and not by two flaps in the manner usually adopted lower down.

Some months must elapse before the result of this pro-

cedure can be judged. Following operation, as might be expected, there was more pronounced sensory and motor disturbance over a wide area, due to the retraction and handling of the plexus. In Thorburn's cases of cervical rib, pain was relieved by operation in 80 per cent.; paralysis was cured in 50 per cent.; impairment of sensation was improved in all, but cured in none; wasting usually persisted.

In addition to the cases operated upon by Stiles (un-

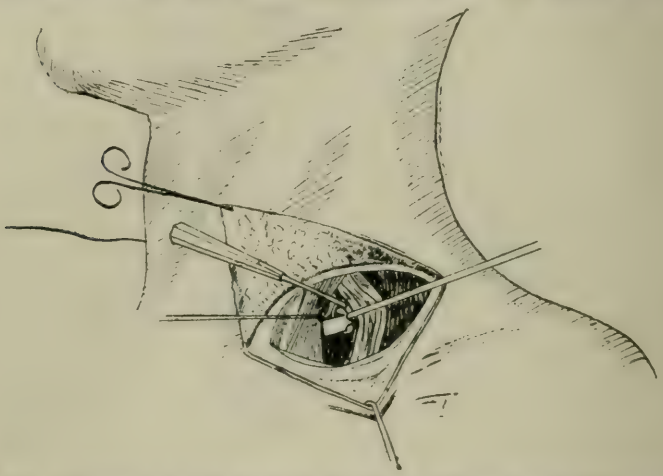

Fig. 3. Exposure of rib in front of plexus. Plexus and sternomastoid retracted. Doyen's elevator round the rib.

published), Thorburn, Murphy, Morley, Stopford, and Telford have drawn attention to brachial compression neuritis produced by a normal first rib.

The symptoms in a general way are those of cervical rib. Pain along the ulnar border of the arm and forearm was present in all the cases described by Stopford. The pain was always increased by anything producing depression of the shoulder girdle. He states that atrophy and paresis affect for the most part the intrinsic muscles of the hand, but the flexors and extensors of the wrist not infrequently are involved. Loss of protopathic sensibility is greater than the epicritic loss; a dissociation which denotes nerve compression.

Etiology.—Any condition which lowers the shoulder girdle, such as fractured clavicle, will pre-dispose to compression by bringing the lower trunk in more close relationship with the first rib. The majority of cases, however, occur in young adults without apparent cause. There is some evidence to show that when an unusually large contribution from the first or second dorsal nerves goes to the formation of the lower trunk of the brachial plexus, any condition which lowers the shoulder girdle may cause compression against the first rib. At puberty a descent of the shoulder

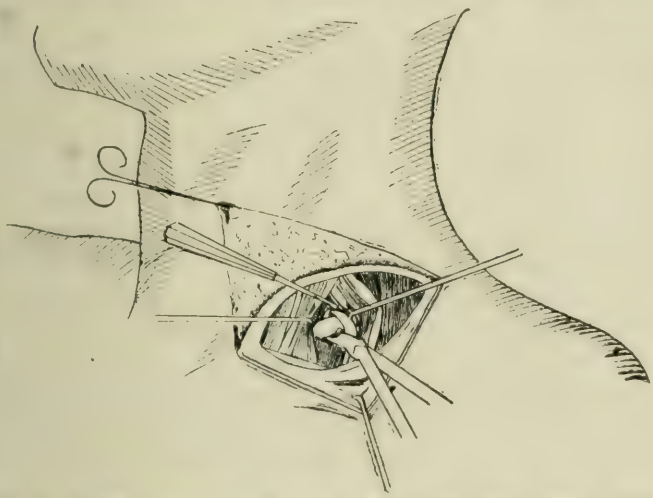

Fig. 4. Artery retracted in front and first dorsal nerve behind. Division of rib at scalene tubercle.

normally takes place, especially in women. If there is muscular weakness, and this normal descent is exaggerated, and, at the same time the lower brachial nerve trunk contains a larger contribution than usual, compression is likely to occur.

Diagnosis.—The history of the case; pain along the internal cutaneous nerves; atrophy of the intrinsic muscles of the hand; the perception of touches with cotton wool, with the absence of distinct feeling of pin-pricks to the inner fingers; and very constantly a loss of accurate differentiation between degress of hot and cold are guides in

excluding rheumatism, or simple neuritis. Inflammatory conditions of the nerve roots (radiculitis) are often associated with inequality of the pupils, due to sympathetic involvement in a position above the point where compression of the lower trunk takes place at the first rib. Syringomyelia must be excluded; and it is interesting to note that Murphy has drawn attention to an association between this disease and the presence of cervical rib. J. B. Murphy states that occasionally elongation of the transverse process of the seventh cervical vertebra, or acute angulation of the first rib at its juncture with the transverse process, produces the same symptoms as a true seventh cervical rib. Great care must be taken to ascertain before removal of a cervical rib that it is the real cause of the trouble. At least one case is described where a cervical rib was present, but the compression of the nerve was due to a normal first rib, and the symptoms disappeared after removal of the latter.

I have to thank Mr. A. K. Henry for his assistance in connection with the literature on the subject, and for valuable suggestions made when working on the cadaver. Dr. McAuley kindly assisted me at the operation, and Sir Harold Stiles wrote me a full description of the operation as performed by him. Dr. Hayes, who knows the patient personally, after much trouble obtained the photograph shown—the region is full of pitfalls and difficulties from a radiologist's point of view.

A CASE OF DIABETES MELLITUS WITH LOCAL INFECTION AND ACIDOSIS TREATED BY THE ALLEN METHOD (ABSTRACT).[a]

By HENRY F. MOORE, M.D.

Acidosis may be defined as a departure from the normal equilibrium between acids and bases within the body whereby the power of neutralising acid is diminished, or a condition in which the alkali reserve of the body is

[a] Read before the Section of Medicine of the Royal Academy of Medicine in Ireland, February, 1920.

reduced below the normal level. Acidosis may be due to (1) deficient elimination of acid bodies, (2) over-production of acid bodies, or (3) administration of acid. In diabetes mellitus it is brought about by the accumulation of abnormal amounts of the so-called "acetone bodies" (β-oxybutyric and aceto-acetic acids and acetone) due to either over-production or deficient elimination. It is possible that bodies other than "acetone bodies," concerning which we know little as yet, may be in part responsible for the acidosis of diabetes mellitus. Clinically the degrees of acidosis may be roughly measured in a number of ways, apart from intensity of symptoms—*e.g.*, (1) the intensity of the ferric chloride reaction in the urine; (2) the nitro-prusside test as applied to the urine or blood plasma; (3) by asking the patient to hold his breath without extra preliminary lung ventilation. A normal person can hold the breath for 30 to 40 seconds with ease, whereas in acidosis the duration of apnœa is shortened considerably; (4) by noting how much sodium bicarbonate it is necessary to administer by the mouth in order to turn the reaction of the urine alkaline; (5) by the determination of the CO_2 tension in the alveolar air or of the carbon dioxide combining power of the blood plasma; (6) by the determination of the hydrogen ion concentration of the blood serum or plasma, or of a dialyzate of the same according to the method of Mariott. There are other methods, such as direct quantitative determination of the "acetone bodies" in the blood and urine. As regards the progress of a case of acidosis, most reliance can be placed on the determination of the alkali reserve (CO_2 combining power) of the blood (method of Van Slyke) than on any other single laboratory test, and without this information is is often impossible, as Allen points out, to judge progress or direct treatment in an intelligent way. Blind reliance cannot be placed upon the determination of the alkali reserve, because, for example, in cases dying of diabetic acidosis the alkali reserve may sometimes be brought to even higher than normal by alkali administra-

tion; hence, clinical judgment and experience are of the greatest importance in handling these cases, and there is no laboratory test that can be followed blindly.

It is not designed to enter fully here into the treatment of acidosis, but the following may be mentioned as methods to be considered:—(1) The administration of alkali (generally sodium bicarbonate), which may be given by mouth, rectum or intravenously. The possible benefit of this treatment consists in relieving a dearth of alkali, and perhaps facilitating the elimination of "acetone bodies." The possible harm is the nausea which may result from oral administration, and the sudden death that occasionally follows excessive intravenous administration. In addition, alkali may affect the toxic condition in ways not yet understood. It is known that there are different varieties of diabetic coma, which, of course, results from acidosis. In that variety of coma in which air hunger is due to alkali want, the administration of alkali is indicated; in coma without dyspnœa and with intoxication, where the alkali reserve of the blood is not markedly diminished, as shown by the Van Slyke method, the administration of alkali is generally of little use. Both Allen and Joslin point out that the indiscriminate use of alkali may be quite harmful. It is usual to recommend ten grams of sodium bicarbonate daily for use over long periods, or larger doses for a few days, but it is doubtful if prolonged alkali administration (two weeks or more) is ever of use. Joslin, who has had a tremendous experience in diabetes, has almost entirely given up the use of alkali, and Allen does not recommend it as a routine. The latter author states that the use of alkali therapy is (1) to combat a long and stubborn acidosis, and (2) to supply alkali deficit in coma or cases tending towards coma where laboratory tests show that there is alkali dearth (low CO_2 combining powers of the blood). Undoubtedly the best treatment is to rely on the control of the fundamental metabolic condition by the fasting method of Allen, and to use alkali only if specially indicated. (II) The use of rest in bed, warmth, keeping the bowels open and gastric lavage in acidosis are well under-

stood. (III) Forcing fluids up to several litres a day by mouth, rectum or, if necessary, intravenously is also recognised in the treatment of acidosis; because (*a*) the concentration of the "acetone bodies" in the urine is limited to about ten grams per litre; and (*b*) β-oxybutyric acid and diacetic acid circulate as salts. These are eliminated partly as salts and partly as acids, leaving part of the bases in the organism to neutralise further acids. Thus aiding elimination of these "acetone bodies" by forcing fluids acts somewhat in the same way as the administration of alkalis by saving the bases to the body to a certain degree. (IV) The administration of sodium chloride by mouth in amounts up to 20 or 30 grams per day (unless contraindicated), or physiological salt solution, has been emphasised by Joslin; first, because sodium chloride is valuable as a diuretic; secondly, because its retention is associated with œdema, and Joslin, in his wide experience, has only seen one patient with œdema die from diabetic coma. The utilisation of carbohydrate in the body aids in the elimination of the "acetone bodies;" but, of course, carbohydrate utilisation depends on the degree of hyper-glycæmia, glycosuria and other factors which we cannot go into here. Suffice it to say, if the body is flooded with non-utilisable carbohydrate it is worse than useless to add more.

There are several more or less indeterminate types of acidosis met with—(1) Diabetic coma, of which there seem to be several forms; these patients generally die, but they may get well if treated according to the method of Allen. (2) *Fasting acidosis;* normal men undergoing a fast, or on a protein-fat diet for a few days, frequently show acidosis. The same is often seen in diabetic patients put on the fasting treatment, although this is rare in spare individuals if fat is omitted from the diet for a day or two before the actual fast. The treatment of fasting acidosis is food, generally carbohydrate or protein, singly or in combination. (3) Some cases of diabetes mellitus develop a rapid protein breakdown with maximal dextrose-nitrogen ratio and severe acidosis. The majority of these cases die, but such cases are comparatively rare. The

essential in the treatment of diabetic acidosis is to control the glycosuria, and the best means of accomplishing this is by the use of Allen's fasting treatment. Finally, it may be said that the nature of diabetic acidosis is not well understood at present, but that it probably is in large degree dependent upon a disordered intermediary metabolism of protein and fat.

The following case will illustrate the treatment of diabetes mellitus complicated by severe acidosis and a pyogenic infection of the foot by the fasting method of Allen. It is greatly to be regretted that at no time during the conduct of the case was it possible to determine the blood sugar or urinary ammonia, or, indeed, to perform any but the simplest laboratory tests, owing to the present enormous difficulty of obtaining laboratory supplies. This want it is hoped to remedy in the near future.

Case History.—E. C., male, aged 66. *Family history* unimportant; no diabetes. *Past history* very indefinite; typhoid as a boy. Stone was removed from bladder ten years ago. For some weeks previous to the removal of the stone there was polyuria, hæmaturia and painful micturition. All these symptoms disappeared after the removal of the stone. Although sugar was discovered in the urine at the time of the operation for stone, and the glycosuria persisted continuously, the patient apparently had none of the classical symptoms of diabetes mellitus; for the past ten years he had been under dietetic direction for the glycosuria. *Present illness*: "Corn" on the sole of the left foot at the base of the fourth toe in October, 1919; trimmed by chiropodist; corn slightly painful until December, 1919, when he discovered that there was an inflammation around it and a discharge from the centre of the corn. Foot was poulticed, but the inflammation became rapidly worse, and when seen by the present writer the condition of the foot was as follows:—Foot very much inflamed and œdematous up to ankle; copious discharge of pus from opening on sole about two inches proximal to base of toes. On further examination it was found that the area of pyogenic inflammation had burrowed deeply in the foot, causing partial slough of the

Date	URINE: Fluid intake	URINE: Volume	URINE: Sp gr.	URINE: React.	URINE: Alb.	URINE: Gerhard (Fe2Cl6) Periods 1 2 3 4	URINE: Sugar, Qualitative Periods 1 2 3 4	BLOOD: Plasma nitroprusside	BLOOD: Blood Alkali Reserve (H-Pw)	DIET: Carbohydrate gm.	DIET: Protein gm.	DIET: Fat gm.	DIET: Alcohol c.c.	DIET: Calories	Naked weight lbs.	Na HCO_3 gms	Blood pressure	REMARKS
1930 Jan. 2	—	2940	1 032	sl.	0 01%	(+4)	(+4)			120+	80+	90+	—	1 610 +	143	—	172/86	Profuse discharge, left foot
3	—	1200		—		(+3)	(+4)			120+	80+	45+	—	1,205 +	—	—	172/86	2.7 per cent sugar in urine
4	2000 +	1470		ask.		3 3 3 3	(+3)			73	82	14	—	746	—	—	—	Drowsy
5	2000 +	14004		ask.		3 3 3 3	(+3)			71	19	4	7	445	—	—	—	Drowsy [arrested
6	2250	1080		alk.	++	3 3 3 3	(+3)			55	10	9	7	300	—	—	—	Drowsy. Inflammation in foot
7	1500	1200	1 030	ac.	+ +	(+3)	(+3)			60	9	4	15	417	—	—	—	Auricular extrasystole, 1 in 10 or 12 (polygraph tracing)
8	1695	1240		ac		(+4)	(+3)			72	9	4	15	465	—	—	—	Drowsy
9	1305	1500		—		(+4)	(+3)			80	11	5	15	526	—	—	—	Extrasystoles more frequent
10	2205	3 00 (?)		—		(+4)	(+2)			0	5	0	7	60	110+	—	—	Drowsy
11	1920	960		ac	++	4 4 4 4	(+2)	— + — +	7.7	0	5	0	7	60	—	20.5	—	—
12	2700	1200		alk.		(+4)	(+3)			0	5	0	7	60	—	13	—	—
13	2610	1410		alk		4 4 4 4	tr. tr tr.	+ + + +	7.7	0	5	0	7	60	—	—	—	—
14	2610	1620		n	++	3 3 — —	sl tr tr 0	+ + +	7.8	0	5	0	7	60	137.5	22.5	160	—
15	2070	1500	1 020	alk	++	3 3 4 2	sl tr tr sl tr tr			7	7	0	15	103	—	10	—	Extrasystoles, about 1 in 20
16	2070	1500		alk		2 3 3 3	sl tr 0 sl tr sl tr			6	32	7	15	220	129.5	30	—	—
17	3060	2220		alk		3 1 1 1	0 0 tr sl tr			7	51	14	15	244	—	2.5	—	Extrasystoles occasionally
18	3360	2370		sl.		3 3 2 1	0 0 0 0			10	55	11	15	301	130	—	—	
19	3000	2580		—		3 3 1 1	0 0 0 0			10	79	11	15	315	129	—	—	
20	—	—		—		3 3 1 1	0 0 0 0			22	14	11	15	305	—	—	—	Extrasystoles disappeared
21	3000	2970	1 014	sl.	-	1 2 2 1	0 0 0 sl tr			11	66	59	15	1,042	—	—	—	—
22	3060	2760				2 1 2 2	0 0 tr 0			36	57	38	15	990	127.5	—	—	General massage. Edema of dorsum of foot, discharge lessened
23	2220	2420		n		1 2 2 1	0 0 sl tr 0			10	38	19	15	168	-			General massage
24	1860	1920				2 2 2 2	0 0 0 0			7	7	2	15	135	—	—	—	General massage
25	1920	1920				2 2 2 2	0 0 0 sl tr	+	8.0	28	58	5	15	462	130.75	—	—	General massage
26	1920	1860				1 1 2 2	0 0 0 0			32	71	9	15	511	131.75	—	—	Slight oedema right foot
27	2070	1920		n		2 2 2 1	0 0 0 0			12	41	9	15	311	—	—	—	Still some discharge yesterday General massage
28	1800	1560			tr	1 2 2 2	0 0 0 0			8	60	18	15	459	129.5	—	—	—
29	1890	1710		n		1 2 2 0	0 0 0 0			12	16	9	0	225	—	—	—	Odema of foot disappeared Exercise started (weights and pulley) on foot
30	1680	1560				1 1 1 1	0 0 0 0	0	8.5	12	20	9	0	209	—	31.75	—	Soft unidentified hemorrhage
31	2460	1770	1 016	n	+	1 1 0 0	0 sl tr 0			86	52	9	—	763	131.75	—	—	NaH_2PO_4 and methenamine occasionally hematuric
Feb. 1	1770	2250		sl.		1 0 tr tr	0 0 0 0			86	52	9		573	—	—	—	—
2	2490	1860				0 1 tr 0	0 0 0 0			106	75	4		661	130.25			
3	2190	2430		n		tr 1 tr 0	0 0 0 0			125	78	9		806	116.25			
4	1860	2190		n	0	0 0 0 0	0 0 0 0			133	30	10		742	—	—		
5	1950	1920	1 016	ac	0	0 tr tr tr	0 0 0 0			18	28	14		330	—	—		
6	1530	1515		ac	tr	tr 1 tr 0	0 tr 0 0			95	69	49		1,048	115.75	—		Extrasystoles reappeared about 1 in 8 or 10
7	1650	1920		ac	tr	0 0 0 tr	0 0 0 0			85	71	70		1,201	—	—		
8	2190	1780	1 016	ac	tr	0 tr tr 0	0 0 tr 0			90	77	85		1,284	117	—	—	
9	1770	1720				0 tr 0 tr	0 0 sl tr 0			92	70	53		1,105	—	—	—	Extrasystoles disappeared
10	1110	1260		ac		0 tr 0 0	0 0 — 0			40	29	11		487	116.75	—	—	—
11	2160	1890	1 012	ac	tr	tr tr 1 0	0 0 0 0			12	12	8		148	116	—	—	—
12	1560	1260	1 012	ac	tr	0 0 0 tr	0 0 tr — tr 0			90	67	35		1 085	115.75	—	—	Extrasystoles 1 in 8 or 10
13	1860	1830				1 1 0 1	0 0 0 tr			80	67	70		1 113	116.25	—	—	—
14	1530	1140	1 022	ac	+	0 1 0 0	0 0 0 0			78	61	91		1 175	118.25	—	—	Extrasystoles disappeared
15	2370	1470	1 022	ac	tr	0 0 tr. 0	0 0 0 0			45	25	16		604	—	—	—	Evening temperature, 99.80 (axilla)
16	2070	2850				0 0 tr 0	0 0 0 0			9	1 -	11		187	119	—	—	—
17	1440	1920				(0)	0 0 0 0			74	60	92		1 337	117	—	—	—
18	1860	1860	1 016	ac	tr.	(0)	(0)			72	66	94		1 404	116.5	—	—	—
19	1620	1500		ac		(0)	(0)			66	65	93		1 370	116.5	—	—	—
20	1440	1290	1 022	ac	tr	(0)	(0)			61	60	79		1 207	116	—	—	—
21	1440	1260		ac	tr.	(0)	(0)			72	62	77		1 229	—	—	—	—
22	1450	900	1 020	ac.	tr	(0)	(0)			72	70	85	7	1 364	116	—	—	—
23	—	—	1 012	ac.	sl tr.	(0)	(0)			72	62	54	7	1 187	117.5	—	—	—
24	1590	1800	1 012	ac	sl tr.	(0)	(0)	±	8.4	70	58	82	15	1,359	117.5	—	160/80	11 readings per h., body wt.
25	—	—	—	—	—	(0)	(0)			70	58	82	15	1,359	116.5	—	—	—

The numerical exponent following a + indicates the intensity of the reaction up to a maximum of 4. The figures 1, 2, 3 and 4 in the Gerhard and Qualitative columns indicate the intensity of the reaction up to a maximum of 4.

The figures 1, 2, 3 and 4 under the legends *Gerhard (Fe2Cl6)* and *Sugar, Qualitative* indicate the urine divisions as stated in the text. In the Gerhard and Qualitative Sugar columns the results are enclosed in brackets where only the total 24 hours' urine was examined for [illegible] slight trace — approximately

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plantar fascia, and evidently involved the deeper structures; there was a collection of pus on the dorsum of the foot about to burst. Later surgical interference showed that both these areas were connected through the whole thickness of the foot, so that extensive damage must have been done. The fourth toe was gangrenous. The dorsal area was opened by Mr. Blayney, who also provided for drainage on the sole, and who was in charge of the surgical aspect of the case thereafter. The surgical treatment adopted was conservative, and consisted of drainage and the use of one of the Carrel-Dakin solutions. The medical treatment of the case is illustrated by the accompanying chart. It was considered wiser not to institute an immediate fast, owing to (1) the systolic blood pressure of 172 mm.; (2) the cardiac irregularity which later proved to be due to auricular extrasystoles, and (3) because it was thought that a too sudden omission of all food might upset the patient's cardio-vascular-renal apparatus; and finally, because of the long-standing diabetes in a man of sixty-six years of age. The urine contained albumin and an odd hyaline cast.

Explanation of Chart.—The alkaline urine in a case of acidosis is anomalous; it may be explained by the fact that the urine was mucoid, and from it was isolated *B. mucous capsulatus;* the mucoid condition of the urine was due to the activity of the organism which otherwise appeared to cause no inconvenience to the patient.

The Gerhard ferric chloride and qualitative sugar (Benedict) tests were generally done on the urine collected in four separate periods during the twenty-four hours: 11 p.m. to 7 a.m., 7 a.m. to 12 noon, 12 noon to 6 p.m., and 6 p.m. to 11 p.m. In this way the effect of the individual meals could be determined. Where the 24-hour urine was not so divided the result is indicated in brackets.

The blood alkali reserve was determined by the method of Mariott (Arch. Int. Med., 1916, XVII., 840). The figure 7.7 on Jan. 11 showed the patient to be in great danger from acidosis; the figure 8.4 on Jan. 30 is almost normal. The composition of the diet was calculated according to the tables of Bryant and Atwater.

Comment.—Dietetic treatment began January 4. Until January 10, when actual fasting treatment began, no improvement was noticed except that the inflammation in foot was arrested. On the other hand, the patient's condition did not become worse. During the early days of treatment fluids should have been forced a great deal more than they actually were; indeed, the instructions to that effect were given, but owing to a misunderstanding were not carried out. Fasting quickly controlled the glycosuria, and later the acidosis cleared up. The infection in foot cleared up completely, and the wounds granulated. The patient's affairs demanded his leaving for home on February 26, where he is being looked after by his local doctor. On February 26 the condition was as follows :— No glycosuria, no acidosis; on a full caloric diet for a resting man, and able to maintain his weight at 116 lbs.; infection in foot completely controlled, and wounds rapidly granulating; dry gangrene of fourth toe with healthy line of demarkation—this condition to be dealt with later surgically. The following is a specimen diet upon one of the last days in hospital :—

Breakfast		*Lunch*		*Dinner*		*Supper*	
Oatmeal	20	Broth	150	Broth	150	Oatmeal	20
Tomato	50	B. Sprouts	50	Oatmeal	20	Tomato	50
One egg		Cauliflower	50	B. Sprouts	50	Cauliflower	50
Bacon	30	Six oysters		Fish	30	Butter	10
Butter	10	Butter	10	Meat	30	Milk	90
Milk	90	Milk	90	Butter	10	Tea	
Whiskey	7.5	Tea		Milk	90		
Coffee				Whiskey	7.5		
				Coffee			

Quantities in grams or cubic centimetres. Vegetables and oatmeal weighed raw: meat weighed cooked.

It is to be expected that when the condition of the foot will permit the patient to lead a more active life his diet will be even more liberal, and that he can utilise still more carbohydrate.

The case illustrates the successful treatment by the Allen method of a patient with diabetes mellitus complicated by severe acidosis and a severe local infection.

SOME OBSERVATIONS ON THE FUNCTIONS OF THE SUPRARENAL GLANDS IN WHITE RATS.[a]

By H. V. EXNER, M.A

THIS paper deals with a series of experiments that I carried out, which form the basis of my observations. I shall also consider the views and experiments of physiologists on the subject of suprarenal function, which is still an obscure one, and merits further research.

One of the chief reasons for selecting the white rat for these experiments was the ease with which this animal lends itself for work on suprarenal glands. Its suprarenals can readily be removed operatively, and then also it can be easily bred and kept, and this at no very great cost. The small size of the white rat offers many difficulties to the experimenter, but with some practice these can be overcome.

The suprarenal glands in the white rat are compact, round, grey-coloured organs of the size of a split pea, and appear to be slightly more bulky in the female than in the male animal.

Double epinephrectomy can best be performed as follows :—

Make one longitudinal incision through the thick skin of the previously shaved rat, in the mid line of the back, extending from just above the lowest dorsal vertebra to a point about three quarters of an inch caudal to this.

The skin, which is freely moveable over the muscles of the back, can readily be pulled over to either side in turn, to allow the lateral incision to be made through the muscles of the back, in the angle between the vetebral column and the last rib. This lateral incision through the thick layer of muscles (sacro-spinal) if made in the exact spot, exposes the suprarenal, which can be raised slightly into the wound

[a] An Essay awarded the Silver Medal of the Dublin University Biological Association in the Session 1918-1919.

by a special forceps. A catgut ligature is then passed round its hilum, and the gland is snipped off with a pair of scissors, and removed in entirety.

Little or no bleeding occurs, and the wound through the muscle invariably closed up without any trouble. The amount of shock to the animal cannot be severe, as of a total number of rats exceeding sixty on which I performed double epinephrectomy at one operation, four died, and death in each one of these cases was found to be due to some other than operative causes.

Post-mortem macroscopic and microscopic examination revealed no accessory suprarenals or remnants thereof, except in one case. Here a small gland, remnant or accessory (?), was found on the right side near upper pole of kidney, and on microscopic examination was shown to consist of both medullary and cortical substance.

The white rat survives the removal of both suprarenals, whether the glands are removed at two operations performed at intervals of some days or weeks, or both at the same operation.

Injected into the vein of an animal, adrenalin causes a sudden rise in the arterial pressure, which takes place even when the medulla and cord are destroyed, the splanchnic nerves cut, and the vasco-constrictor ganglia paralysed.

We must ask the question, what function does the suprarenal perform during life in an animal, and what are its relations to rises in blood pressure?

It is generally accepted that the active principle adrenalin is produced by the medullary portion of the suprarenal glands, and that animals cannot live for any length of time without their suprarenals.

In the case of the white rat I found that of over sixty rats whose suprarenals I removed, all survived the operation for periods varying from seven days to more than six months. In most instances these animals were further used for blood pressure experiments, sugar puncture and stimulation of the cephalic end of the cut vagus nerve. The animals used for blood pressure experiments were killed as soon as the required records and tracings had

been taken, so that their periods of survival would have been much longer, but for the second experiment performed upon them. A period of at least seven days was always allowed to elapse after performing double epinephrectomy, before using such animals for any other subsequent experiment.

In the four rats which died in less than seven days after removal of the suprarenals, the cause of death ws found to be due to other well-marked causes.

Arguing from the hypothesis that the outpouring of adrenalin by the suprarenals into the circulation of a living animal causes a rise in blood pressure, it would be expected that in animals where these glands had been removed, this phenomenon would not take place, as there would be no glands present to produce an outpouring of adrenalin.

From my experiments I found first of all that the white rat survives the removal of both suprarenals. Rats which had undergone the operation of double epinephrectomy were used for studying the effects of asphyxiation on their blood pressure.

The difficulties presenting themselves to the experimenter when carrying out such a blood pressure experiment upon so small an animal as the white rat are very great indeed, and it was only after repeated unsuccessful attempts had been made, that these experiments yielded any results at all.

The method of experiment may be briefly outlined as follows :—

To record the blood pressure a glass cannula, drawn to a very fine capillary tube was inserted into the right or left common carotid artery of the rat.

The cannula was connected by a three-way tap alternately to a pressure bottle and bellows containing a solution of sodium carbonate and sodium bi-carbonate, and to a mercury manometer with a float and writing point, which recorded any movement on a slowly-moving black surface (smoked paper round drum).

The rat itself was anæsthetised with ether, and a tracheal tube was inserted into the trachea, so that by

clamping this tube complete asphyxiation could be produced.

The vagus nerves were generally cut. By means of the pressure bottle and bellows the pressure of the fluid in the tubes and canula could be raised to a convenient height, so as just to equal that of the blood pressure in the carotid artery of the rat.

The carotid artery, even in a large rat, is extremely small, and the cannula, which has to be inserted into the artery, must be drawn out almost to capillary size, thus the slightest clot forming will block the cannula, and often necessitate the employment of the other carotid artery, or, at the worst, prevent the taking of a record from that particular animal.

Before using a rat for a blood pressure experiment at least seven days were allowed to elapse after the double epinephrectomy operation, to give the animal time to recover.

The first successful blood pressure experiment carried out on an operated rat gave the following results :—

On clamping the tracheal tube and thus asphyxiating the anæsthetised rat, there was a fall in blood pressure from 134 mms. Hg. to 52 mms. Hg. Then a rise to 64 mms. Hg. occurred, which was followed again by a secondary fall. At this stage the asphyxiation was discontinued, and if breathing did not commence of itself, artificial respiration was resorted to until the animal had recovered and breathed normally again. In stopping the asphyxia there was a very marked rise in blood pressure, which reached the normal height that prevailed before asphyxiation. In many cases the pressure rose to a higher level after discontinuing asphyxia than it was at before.

This result was quite what was expected. The suprarenals having been removed, no outpouring of adrenalin could take place, and hence instead of a rise in blood pressure on asphyxia, there was a fall. This result was confirmed by repeating the experiment several times with other rats.

Thereupon a normal rat, with its suprarenals intact, was used. On asphyxiating such an animal it was found

that instead of getting an increase or rise in blood pressure, there was a distinct fall, then a rise and then again a fall. On stopping the asphyxia at this stage there was an increase in blood pressure reaching the same height as before asphyxiation commenced.

This result or curve was precisely what was got in the case of the rats which had their suprarenals removed, the curves or blood pressure tracings being similar in the two cases.

This result was contrary to all expectations, as asphyxiation produced no rise whatsoever, but a very marked fall instead. This experiment with normal rats was repeated several times, and in each case the same result—*i.e.*, fall of pressure on asphyxiation—was produced.

The suprarenal glands and their secretion cannot, therefore, be the cause of the fall in blood pressure on asphyxiation in the white rat, and it is problematical if they play any part in causing a rise of blood pressure in the living animal, although an intravenous injection of adrenalin into an animal does cause a marked rise of blood pressure.

The Curare Effect.

An interesting discovery with regard to the drug curare was made in these series of experiments.

After failing to get a rise in blood pressure by asphyxiating a normal white rat, the drug curare was employed. Besides anæsthetising the animal with ether, it was given a subcutaneous injection of curare. This injection causing paralysis of all voluntary muscles, artificial respiration had to be resorted to, and an air pump driven by electricity was employed in these subsequent experiments.

In the cases of both normal, unoperated rats, and such rats on which double epinephrectomy had been performed, on asphyxiation there was an increase in blood pressure which was followed by a fall and then a secondary rise.

After the secondary rise there was another fall of pressure again. On discontinuing the asphyxia, and resorting to artificial respiration again, there was a great rise in blood pressure, which equalled, and even exceeded, the pressure before asphyxiation was started.

From these results it appears that the suprarenals have no effect on the blood pressure in the white rat on asphyxiation of the animal, and that there is a fall in blood pressure on asphyxiation, whether the animal has any suprarenals or not.

A rise of blood pressure can, however, be obtained in rats with or without suprarenals, if these animals have previously been curarised.

Curare seems to sensitise the vaso-motor centre to CO_2. On asphyxiation the carbondioxide collecting in the blood seems to act on this sensitised centre, and cause vaso-constriction, with a subsequent rise in blood pressure.

The most careful *post-mortem* examinations of all these rats employed, and which had had both suprarenals removed operatively, except in the one case mentioned, never revealed any suprarenal glands, either remnants or accessory.

We can collect the outstanding facts observed during these experiments under five headings :—

1. White rats survive the operative removal of both suprarenal glands.

Non-curarised rats.

2. Asphyxia in normal white rats does not produce any rise in blood pressure, but does produce a *fall* in blood pressure.

3. Asphyxia in white rats, whose suprarenals had been removed previously, causes a *fall* in blood pressure.

Curarised rats.

4. Asphyxia in normal curarised rats cuses a *rise* in blood pressure.

5. Asphyxia in curarised rats, whose suprarenals had been removed previously, causes a *rise* in blood pressure.

These observations lead to the conclusion that the suprarenal glands have no function which affects blood pressure during asphyxiation.

Also any accumulation of carbon-dioxide in the blood, caused by asphyxiation, does not sufficiently stimulate the vaso-motor centre to cause a rise in blood pressure;

but actually vaso-dilitation occurs with a fall in blood pressure.

Curare, then, must affect the vaso-motor centre, and sensitise it to any accumulation of carbondioxide in the blood, so that when such an accumulation occurs, as does on asphyxia, this hyper-sensitive centre reacts, causing vaso-constriction and a rise in blood pressure.

It might be mentioned here that in the case of a baboon whose blood pressure was recorded during an experiment, similar to the blood pressure experiments performed on the white rats, asphyxiation of the animal (uncurarised) gave only a very slight rise in blood pressure.

Whether the white rat is peculiar in showing a fall of blood pressure on asphyxia seems not yet to have been determined. As far as I could ascertain from looking up the literature on the subject, other experimenters always seem to have employed curare when doing blood pressure experiments. The drug, as has been shown in these experiments, affects the blood pressure on asphyxiation, probably by sensitising the vaso-motor centre of the animal as already described.

Further experiments with other animals will have to be carried out to determine whether they will show a rise or fall of blood pressure on asphyxia, when they have merely been anaesthetised, but not curarised. The white rat shows a rise in blood pressure on asphyxia when curarised, and always a pronounced fall when not curarised.

The anaesthetic employed for rats was ether. Chloroform was found unsuitable, as it so rapidly killed the animals.

In 1900 Durduft formulated the hypothesis that the cardiac and angiotonic effect of asphyxiation did not occur directly through over saturation of the blood with carbondioxide, but indirectly on account of the venosity of the blood producing the optimum conditions under which the active principle produced by the suprarenals could best produce its effect.

This hypothesis certainly does not agree with the results obtained during the experiments described in this paper.

The Question of Accessory Suprarenals.

We come on next to another question. According to

several writers accessory suprarenals are found in white rats.

Abelous and Langlois described accessory suprarenals in ten cases out of eleven, near the main glands, on the post surface of the renal vein.

Wiesel described accessory suprarenals between testicle and epidymis (cortex only).

H. and A. Cristiani found white rats, adult and sexually ripe males especially, survive double epinephrectomy.

A. Veilch describes accessory suprarenals in nearly 50 per cent. of rats.

Dealing with the question of accessory suprarenals, macroscopic and microscopic examinations of the abdominal tissues of rats I employed, except in one case, showed no signs of accessory suprarenals.

With regard to the question of accessory suprarenals in the testicles of white rats, I performed double epinephrectomy and castration on a number of rats (sexually mature), and although three of these animals died within two to six days, the great majority of these animals survived both operations (double epinephrectomy and complete castration) for periods varying from 15 to 54 days, and *post-mortem* examinations revealed no traces of any accessory suprarenals.

The white rat is thus able to survive double epinephrectomy for considerable periods, even when there are no accessory suprarenals, which could carry on the functions of the suprarenal glands.

The operation for total removal of the suprarenal glands was not, however, without some effect. Operated rats were never the same as before.

Muscular weakness, irritability, and loss of appetite was characteristic of these animals after double epinephrectomy. Now, could such animals be induced to breed even when a normal, sexually mature male rat, was kept for weeks on end together with operated female rats, and *vice versâ*?

The Suprarenals and Glycosuria.

We next come to deal with another function of the suprarenal glands.

Cybulski is of opinion that suprarenal medullary tissue produces a substance which is vital for certain functions in the human body.

Claude Bernard punctured the floor of the fourth ventricle near the calamus scriptorius. He found such a marked increase of sugar occurring in the blood (hyperglycæmia) that it was eliminated after about an hour by the kidneys.

He also found that the stimulation of the central or cephalic end of the vagus, divided between the lung and the head, produces glycosuria. The proof that glycosuria is determined by hyperglycæmia from excessive sugar formation in the liver, lies in the fact that diabetic puncture does not produce glycosuria in animals in which the glycogen of the liver has disappeared (by fasting, various intoxications, &c.). Injury, destruction or irritation of other parts of the central and peripheral nervous system produce a more or less transitory glycosuria.

Eckard found that a lesion of the vermis of the cerebellum of rabbit induces glycosuria.

Schill obtained the same result after division of the optic thalami, lesions of cerebral or cerebellar peduncles, of the pons Varolii; or complete section of the posterior columns of the cervico-dorsal tract of the cord.

From such results, and the results obtained by investigators like Pary, Lustig and Oddi, Biedl, and others, it can be safely asserted that there is no circumscribed diabetogenic centre, but that the abnormal excitation of any important part of the central or peripheral nervous system may directly or indirectly provoke glycosuria.

Blum, in 1901, noticed that subcutaneous and intravenous injections of suprarenal principle, caused elimination of glucose in the urine.

This glycosuria, known also as suprarenal diabetes, was subsequently confirmed and variously interpreted by Zülzer, Cropton, Noël, Paton, Herter and Wakeman and Arousohn.

According to Meyer and Fronin diabetic puncture is ineffectual in animals from which the adrenals or suprarenals have been removed. Further, in such animals the

glycosuria resulting from extirpation of the pancreas is much reduced.

Zülzer definitely assigns an adrenal origin to pancreatic diabetes. He concluded from his experiments with artificial circulation through the liver, that the adrenal secretion is normally neutralised by the pancreas, and that pancreatic diabetes is really a "negative pancreatic diabetes," while it may be regarded as a "positive adrenal diabetes," the real stimulus to the genesis of glycosuria being the suprarenal secretion.

I performed the sugar puncture on a number of rats, whose suprarenals had previously been removed.

First of all, the fourth ventricle near the calamus scriptorius was punctured in a normal rat. The urine from this animal, after having the sugar puncture operation performed upon it, was collected and tested for sugar. It gave a positive result as was expected. This sugar puncture operation is a very delicate one, as the respiratory and the cardiac centres are easily injured, with the immediate death of the animal following.

In rats whose suprarenals had been removed some time previously, the puncturing of the floor of the fourth ventricle never caused any glycosuria. This result was got repeatedly on more than half a dozen different rats.

Before these animals were used for the sugar puncture, a sufficiently long period (from one to three weeks) was allowed to elapse, to let the animals recover from the operation for double epinephrectomy.

In none of these rats did *post-mortem* examination reveal any traces of accessory suprarenals.

These results thus agree with the findings of Meyer and Fromin.

The next experiment was to divide one vagus nerve, in rats whose suprarenals had previously been removed, between the head and thorax, and strongly stimulate for about 30 to 60 seconds, the cephalic portion of the divided nerve.

For stimulation an induced electric current was used.

The urine of these rats was collected and examined for sugar, and a positive reaction got. It was found that a short and weak electrical stimulation did not produce any

glycosuria, but strong stimulation of the cephalic portion of the cut vagus nerve invariably produced glycosuria in the rats without suprarenals. More than half a dozen positive results were obtained before I was satisfied that this result was not merely accidental.

The production of glycosuria in these last series of experiments is rather puzzling.

If the suprarenal secretion is the real stimulus to the genesis of glycosuria, as Zülzer alleges, and the failure to get a positive result from sugar puncture in rats without suprarenals goes to support this theory, why should glycosuria be produced in animals without suprarenals, when the cephalic end of the divided vagus nerve was strongly stimulated as described?

The most careful examination of these rats could reveal no traces of any suprarenal tissue, and yet glycosuria could be produced in them by the stimulation of vagus as described.

This fact certainly is a strong proof against the theory, that glycosuria depends upon the activity of the suprarenal gland, and strongly points to some nervous control of carbohydrate metabolism.

The production of glycosuria does not seem to depend so much on any function of the suprarenal glands, as upon the mode of stimulus or injury to the central nervous system.

It seems safe to assert from the evidence of the above experiments, that the glycogenic function of the suprarenals is dependent on, or works in conjunction with, some nervous control; this nervous control, when adequately stimulated, still being able to produce glycosuria independently, and in the absence of all suprarenal tissue. Whether the converse is true is a matter for speculation, but whatever the glycogenic function of the suprarenal glands may be, it seems to be subordinate to and dependent upon the central nervous system.

[The foregoing experiments were carried out at the South African College, now the University of Capetown, with the kind permission and assistance of Professor William A. Jolly, D.Sc.]

APPROACH TO THE MEDIAN NERVE IN THE FOREARM.

By ADAMS A. McCONNELL, Dublin.

Everyone who has operated on a nerve embedded in a cicatrix acknowledges the difficulty of differentiating the nerve fibres from the scar tissue, and an attempt is always made to expose the nerve above and below the affected

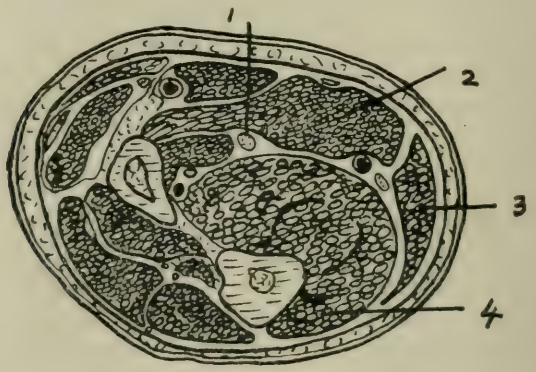

Fig. 1.

1. median nerve. 2. flexor sublimis digitorum. 3. flexor carpi ulnaris. 4. flexor profundus digitorum.

segment. In some cases the scar tissue involves the nerve trunk for several inches.

Wide exposure is, therefore, essential, and it must be carried out with due regard for the integrity of muscles. Especially is this necessity apparent in the forearm where incisions through muscles may produce actual limitation of function or any resulting adhesion may serve as an excuse for alleged disability. Insignificant operative insult may exaggerate or create hysterical paralysis.

It has been my lot to expose the median nerve in the forearm both for recent gunshot wounds and for those of long standing, and for the last four years I have found

that the method of approach described below gives a good exposure of the nerve for the greater part of its course, and that no muscular fibres require division.

A section through the middle of the forearm (fig. 1) shows that the nerve lies between the superficial and deep muscular layers of the forearm, and that a direct approach from the anterior aspect entails division of the flexor digitorum sublimis muscle. The simplest method of reaching the plane between the superficial and deep muscular

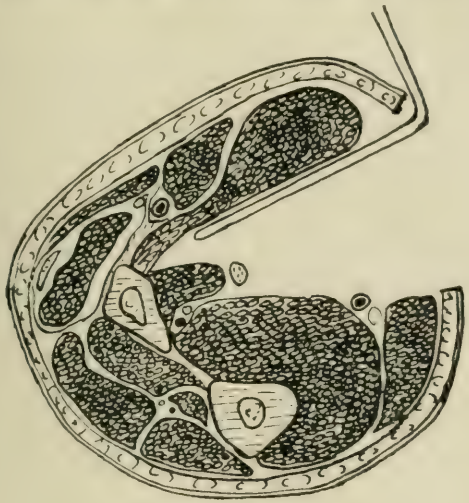

Fig. 2.

groups is to make an incision along the free border of the flexor carpi ulnaris muscle. On retracting this muscle the interval between the flexor sublimis and flexor profundus muscles is immediately exposed.

The ulnar artery and nerve are seen lying on the flexor profundus. A retractor is then inserted deep to the flexor sublimis, and the muscle drawn anteriorly and laterally, thus exposing the median nerve in the greater part of its course in the forearm (fig. 2). With full flexion of the wrist the nerve lies easily accessible down to the transverse carpal ligament.

The superficial incision extends along the lower two-

thirds of the line joining the medial epicondyle of the humerus to the lateral side of the pisiform bone. It must be long in order to allow free retraction of the flexor carpi ulnaris. Except in the rare case in which the plane of scar tissue in the forearm corresponds to the plane of this incision one approaches the median nerve through normal tissues. The plane of scar tissue involving the nerve usually runs antero-posteriorly, so that one approaches it from the side, and, consequently, can identify the nerve fibres more readily.

An incision from in front would have more scar tissue to negotiate. The facility with which a long incision can be made in this situation renders it easy to expose the nerve above and below the affected segment.

The presence of other lesions, the distribution of cicatrical tissue and other considerations will of course modify the indications for this method of approach, but, in the majority of cases, it is easier, quicker and safer to expose the median nerve in the forearm by this ulnar incision than by the orthodox method.

REVIEWS.

La Réaction de Bordet-Wassermann pour le Séro-Diagnostic de la Syphillis. By A. D. Ronchèse, Docteur en Pharmacie. Paris: Masson & Cie. Editeurs. 1919. Large 8vo. Pp. xvi + 211.

This work opens with a description of the investigations which led to the elaboration of the so-called Wassermann reaction. The test as originally performed by Wassermann is described in detail, as also are a considerable number of the modifications which have been introduced by various workers.

The greater portion of the book is, however, taken up with an account of the author's method of performing the test which is a modification of that devised by Tschernogubow.

The author's premises are :—

1. Heating at 56° C. renders many positive serums negative or less strongly positive.
2. The positive power of a serum is weakened by the presence of a negative (or foreign) serum.

It is regrettable that so little proof of these contentions is given. It is stated that of 35 sera examined by the author's method and found positive, eight became negative after heating, and ten became less strongly positive. We are told nothing of the clinical history of the patients from whom the specimens were taken, and nothing of any examination of the lesions for the presence of the causative organism.

For his test Dr. Ronchèse uses fresh, unheated patient's serum—which supplies the necessary complement, human red cells, and anti-human serum. He utilises what he terms the *loi de suppléance* of hæmolysin and complement, that is by increasing or decreasing the amount of hæmolysin

used, the poverty or richness of the serum in complement can, to some extent, be balanced.

A preliminary test demonstrates the amount of suspected serum and of anti-human serum which must be used to cause complete hæmolysis of the fixed amount of human red cells present. The author is forced to confess that some serums are too weak in complement to hæmolyse the cells even with great excess of anti-human serum, and the deficit must be made up by the addition of guinea pig serum.

In the test proper four tubes are used. To each is added the amount of suspected serum found to be sufficient in the preliminary test. To three are added increasing doses of antigen, the fourth acting as a control. After thirty minutes incubation at 37° C. the suspension of human cells and the amount of anti-human serum previously found to correspond to the amount suspected serum used are added. The tubes are returned to the water bath or incubator. Five minutes after hæmolysis is complete in the control tube, the rest are taken out and centrifuged, and the results are read. With regard to the reading the author states that two-thirds of the complement must be destroyed in one of the tubes for the result to be regarded as positive.

The method is ingenious, but one is doubtful of its accuracy since the amount of complement available to be fixed is inconstant, and the volume of the serum used varies. The difficulty disappears if one is prepared to accept the author's claim, that the important thing is not the amount of complement present, but the amount of hæmolytic complex (complement plus hæmolysin). To translate the writer's words—"With the same suspected serum, the same quantity of antigen, and variable quantities of complement the same fraction of the complement is fixed or destroyed."

This book is lacking in that lucidity which we have come to associate with, and almost to expect in, the writings of French authors. Dr. Ronchèse makes many statements and claims which he either leaves entirely unsupported,

or in support of which very slight experimental evidence is offered. A comparison of the author's results with those of other laboratory workers, and with the clinicians' opinions and the patients' histories would have greatly strengthened the claims made by Dr. Ronchèse as to the superiority of his method over others—or would it have weakened them?

J. W. B.

Mental Diseases. A Text-book of Psychiatry for Medical Students and Practitioners. By R. H. Cole, M.D. (Lond.); F.R.C.P. Second Edition. Fully revised with new illustrations. London : University of London Press, Ltd. 1919. Pp. xii + 351.

This excellent work now reaches its second edition. The period of war intervening between the issue of the two editions was, doubtless, the cause of the delay in the appearance of the volume now under review.

Dr. Cole—an alienist of great experience—points out the marked interest evinced by the public in the matter of nervous and mental disease as a direct result of the war. Psychological methods as opposed to medical principles have made extensive headway, and the author believes the time is coming when the teaching of psychology will take its place in the training of the general public.

For this reason he holds that no apology is needed for the amount of space devoted in this volume to an explanation of the various considerations which go to make up the normal in matters psychological. Certainly, it is desirable that all students of mental disease should first have a sound knowledge of psychology before entering upon investigations in the domain of symptoms characteristic of abnormal mental processes.

In the chapter devoted to the general causation of

insanity, the author gives the percentage of insane heredity, as shown by the cases admitted into asylums. The figures vary from 22.7 per cent. of male admissions to 28.4 per cent. of the female patients. Dr. Cole draws attention to the belief that these figures are too low as a result of ignorance and mis-statements. He would be inclined to extend the percentage to 50 per cent. if all transmitted influences were included. There is no doubt that a ridiculously small percentage, giving heredity as a causative factor, is to be found in the available statistics. If one were to confine one's investigations to the written words on asylum admission forms no doubt the resulting percentage would be a small one. The farther one goes into this matter, however, the more fixed becomes the belief that direct heredity plays an enormous part in the production of mental diseases. The writer would put 50 per cent. as a minimum for direct insane heredity, and probably another 25 per cent. could be added for other transmitted influences.

In other words, the problem of the prevention of insanity is largely a matter of Eugenics.

Dr. Cole adopts a clinical classification in this work of an essentially workable character. In consonance with most modern thinkers he accepts the entities of manic-depressive insanity, and dementia præcox.

Perhaps the most interesting chapter of the work is that concerned with general treatment. Both preventive and curative methods are considered. Amongst the latter the effects of thyroid medication find a place. In this connection the author recommends 10 to 20 grs. *ter in die* as a form of treatment in cases of a stuporous nature. At least two schools of thought concerning this class of treatment exist. By one a reaction is aimed at, productive of an illness directly attributable to high dosage. By the other the aim is to replace a potentially defective thyroid secretion in cases not necessarily recognisable as myxœdematous—a result obtained by small doses extending over prolonged periods of time. No doubt there is much to be said for both views. The smaller dosage has become more

prevalent during recent years, and, therefore, a reference to this fact might, with advantage, have been included amongst the varieties of treatment.

As already hinted at, Dr. Cole's work is one that will meet more with praise than with adverse criticism. Students of mental diseases will find the text peculiarly free from those seeming contradictions that tend to confuse, and which are so liable to creep into works of a moderate size. In compilation and production it leaves nothing to be desired.

H. R. C. R.

A Manual of Gynæcology for Students and Practitioners. By Samuel J. Cameron, M.B., B.Ch. (Glasgow); F.R.F.P.S.G., Assistant to the Regius Professor of Midwifery, Glasgow, &c. Second Edition Revised. London: Arnold. 1919. Pp. 559 + xvi.

It pleased us greatly to review the first edition of this work in 1915, and it has been a greater pleasure to read and criticise the improved second edition. It is a very straight book; there is scarcely any padding, and the original illustrations, which have been increased by about twenty, are clear and comprehensive. There is a refreshing monograph on anatomy and development written by Mr. Hutton; this brings us to a particular bone of contention which we wish to pick once more. Should not these minute anatomical and developmental details be taught in the anatomy schools in the early academic years of the student? It is hoped that the committees which are considering the question of the teaching of gynæcology and obstetrics will reply in the affirmative. The exhaustive article on menstruation is instructive, and the latest theories on this subject are sagely dealt with.

May we suggest some alterations in subsequent editions? Let there be a little more large case type to emphasise important points. Let there be more about leucorrhœa,

and less about operations for displacement. It is a pity for instance that figure 119 should be given with the foot-note—"The operation is not recommended." Why give it at all? Let there be shown instead illustrations to explain the operation for rectovaginal fistula—a point we referred to in our review of the previous edition. Obstetric rupture of the uterus should not be treated in a manual of gynæcology.

Regarding endometritis, Dr. Cameron is a disciple of Hitschmann and Adler.

The work is most useful, and will be found valuable by those for whom it is intended.

B. S.

Human Infection Carriers, their Significance, Recognition and Management. By C. E. Simon, B.A., M.D. Philadelphia and New York: Lea and Febiger. 1919. Pp. 250.

The recent European war has emphasised more than ever the importance of epidemiological studies in relation to the infectious diseases. Here the question of carriers is of paramount importance, and Simon makes this clear by quoting the results obtained by many reliable workers. To take but one example, Park concludes from his studies that virulent diphtheria bacilli are present in probably about one per cent. of all apparently healthy throats in New York City. Other workers agree closely with these findings. The figures for carriers of other infectious diseases are no less startling.

Simon discusses the carrier question in the case of the following diseases:—Cholera, diphtheria, typhoid, dysentery, cerebro-spinal meningitis, poliomyelitis, pneumococcus pneumonia, certain streptococcic infections, and influenza.

A chapter is devoted to each disease, and the following

points are discussed :—*active* carriers (*i.e.*, persons who have recovered from the disease in question), *passive* carriers (*i.e.*, persons who have not suffered from the disease), modes of infection, illustrative examples of the rôle played by carriers in recent epidemics, diagnosis of the carrier state, treatment of carriers, followed by an exhaustive bibliography. At the end of the book there is an appendix containing the legal regulations in force in the various States of the U.S.A. relative to carriers.

The work is well printed and mistakes are few. It is of the handy pocket size so seldom seen in modern medical works, and is well worth perusal.

Pathogenic Bacteria and Protozoa. A text- book upon the Pathogenic Bacteria and Protozoa for Students of Medicine and Physicians. By JOSEPH MCFARLAND, M.D., Sc.D. Ninth Edition, Revised. London : W. B. Saunders Company, Ltd. 1919. 8vo. Pp. 858. 330 Illustrations; a number in colours.

WE welcome a new edition of this book. The information contained in its pages is voluminous, but is so well arranged that the book is interesting from cover to cover. The chapter on immunity gives a concise epitome of the current views, and the author has succeeded in extracting the relevant facts from the enormous literature at his disposal. The only criticism which we have to make is in regard to the arrangement of the chapters in Part II.

The index is complete, and information is made easily available. We can most confidently recommend this book to pathologists and advanced students of pathology and bacteriology.

The illustrations are beautifully reproduced, and are sufficient to illustrate the text. We confidently expect that the present edition will be popular.

A Handbook of Gynæcology. By Bethel Solomons, B.A., M.D., Dub. Univ., F.R.C.P.I.; Gynæcologist Mercer's Hospital, &c. London: Baillière, Tindall & Cox. 1919. Pp. 230.

This book is, as the author states in the preface, intended chiefly for the use of students in association with the teaching of a hospital, and there is no doubt it fulfils this end. The majority of gynæcological text-books are to be regarded as books of reference for the general practitioner, not so much for the student working for his examination who requires a book like this with a more concise classification of the subject. This book is a good one, and may be recommended to the student as full of the best kind of teaching, and is not prolix.

One fault which might be altered in forthcoming editions is that some of the illustrations are placed at too great a distance from the text describing them. Most of the pictures are original and good, with the exception of No. 27, which does not seem to serve any useful purpose.

Swanzy's Handbook of the Diseases of the Eye and their Treatment. Twelfth Edition. Edited by Louis Werner, M.B., F.R.C.S.I., Sen. Mod., Univ. Dub.; Surgeon to the Royal Victoria Eye and Ear Hospital, &c. With Illustrations. London: H. K. Lewis & Co., Ltd. 1919. Demy 8vo. Pp. xviii + 671.

A twelfth edition is practically above criticism. In this case, the work has been completely and carefully revised. Chapter V., on "Diseases of the Cornea," now includes a brief account of superficial linear keratitis. The points in the diagnosis of chronic uvetis are summarised at page 193. An interesting note on hypotony or diminished tension of the eyeball is appended to Chapter IX. on "Glaucoma,"

and a note on acne rosacea keritiis will be found at the end of Chapter IV. (p. 113). A *résumé* of the investigations of Dr. Gordon Holmes on the cortical centre of vision is given at page 383.

The book contains over a dozen new illustrations, and has been enlarged by twenty-seven pages. Nine coloured plates are included.

ABSTRACTS OF CURRENT LITERATURE.

MEDICINE AND PHYSIOLOGY.

GENERAL MEDICINE.

FISHBERG, M.: *Diagnostic Pitfalls in Pulmonary Tuberculosis.* "Medical Record." January 17, 1920.

FISHBERG's clinical and eminently practical paper is a protest against the widespread tendency to diagnose tuberculosis in all cases presenting obscure or even abnormal pulmonary signs and symptoms. He instances many sources of this mistake. The family history may mislead—"Statistics have shown that a family history of phthisis may be elicited among non-tuberculous patients almost as frequently as among tuberculous." Possible exposure to infection is also fallacious: for example, conjugal tuberculosis is extremely rare. The presence of other signs of the disease, such as scars or deformities, is against pulmonary infection. Only about 50 per cent. of pleurisies develop subsequent to pulmonary tuberculosis, and, contrary to general opinion, he thinks that "the pulmonary sequelæ of influenza are hardly ever tuberculous."

Hæmoptysis is a prolific source of error, but one third of the cases are due to other causes, such as mitral stenosis, infarct, or bronchiectasis!

Reliance on the results of physical examination is particularly deceptive, and undue importance should not be attached to minor physical signs in the absence of constitutional symptoms. Râles at one or both bases, while the apices are free, never signify tuberculosis as long as bacilli are absent from the sputum.

Fishberg thinks that there is a tendency to place too much faith in radiography. While it is useful for locating the exact lesions in advanced cases "in the diagnosis of early lesions and in differentiating between active and inactive tuberculous lesions, radiography is only exceptionally of value."

Finally, in children of school age the disease is diagnosed more frequently than it really exists. On the whole, he considers it exceedingly rare.

G. E. NESBITT.

FIEVEZ, M. J.: *The Path of Tuberculous Infection and its Localisation at the Apex of the Lung.* "Gazette des Hôpitaux." February 24, 1920.

As an alternative to the theories of either respiratory or circulatory infection in cases of pulmonary tuberculosis, Fiévez propounds another explanation. He regards the apical infection found in the large majority of cases as secondary to a focus in the glands or other structures of the head and neck, and spread by direct extension through the pleural dome. He bases his view on some animal experiments, but mainly on the anatomical findings at autopsy, which show more advanced disease near the apex, more recent lesions lying below and extending perhaps to the subjacent apex of the lower lobe. The direction of spread, he thinks, is influenced by the upright posture. The important practical deduction is that every effort should be made to extirpate possible foci of infection in the situations indicated.

G. E. NESBITT.

BLAKE, F. G., and CECIL, R. L.: *The Production of an Acute Respiratory Disease in Monkeys by Inoculation with Bacillus Influenzæ.* "Jour. Amer. Med. Assoc." January 17, 1920.

THIS paper gives an account of what appears to be a successful attempt to produce influenza in monkeys by the inoculation of cultures of *B. influenzæ* (Pfeiffer). The culture had been obtained originally from a case of influenzal pneumonia. It had been subcultured for six weeks, and its virulence was then so increased by passage through eleven white mice and thirteen monkeys that 0.01 c.c. of a 16-hour blood broth culture, on intraperitoneal inoculation, killed a white mouse within forty-eight hours.

Twelve monkeys were inoculated in the nose with the culture. In every case the animals developed an acute respiratory disease of from three to five days' duration, characterised by sudden onset (three to six hours after inoculation), with profound prostration and the development of rhinitis and tracheobronchitis with sneezing, cough and the outpouring of a scanty mucoid or mucopurulent exudate. In some the temperature was elevated (102° to 106° F.), in others the fever was absent or less marked. In five monkeys a purulent sinusitis developed, and in two a hæmorrhagic pneumonia. In almost all these *B. influenzæ* was found in the nasal discharge, the sinuses, trachea, bronchi, or lungs. In no case was the disease fatal, but nine of the animals were killed during its course.

Ten monkeys were injected intratracheally with the same strain; seven developed pneumonia, two tracheobronchitis without pneumonia, and one resisted infection. The general symptoms

resembled those produced in the first group. *B. influenzæ* was recovered in pure culture from the lungs, bronchi or trachea of those animals killed during the acute stage of the disease.

J. W. B.

GINSBURG, S.: *Reflex Phenomena in a Recent Series of Influenza Cases.* "Medical Record." January 17, 1920.

GINSBURG records a series of nine cases, recently encountered, apparently of influenza of mild type, but presenting marked signs of pleuro-pulmonary involvement. Constitutional symptoms were slight, but all exhibited reflex phenomena such as pain or tenderness in various regions—neck, chest, abdomen, or back. These either accompanied or preceded the appearance of definite physical signs in the lungs, and are, therefore, in his opinion, of considerable significance.

G. E. NESBITT.

WEIL, P. EMILE: *The Behaviour of the Diaphragm in Cases of Pleurisy with Effusion.* "La Presse Medicale." February 11, 1920.

WEIL'S views are founded on radiographic observations of the movements of the diaphragm after removal of an effusion and the introduction of air or oxygen into the pleural sac. One of two results may occur in a case of sero-fibrinous pleurisy. In a comparatively small number (4 to 8 per cent.) practically the entire effusion can be evacuated, and normal or possibly somewhat diminished movement of the diaphragm is observed on the affected side. In these cases the coagulability of the fluid is greatly increased—a favourable sign commented on by Gilbert and Fournier. More commonly, however, it is impossible to remove all fluid, even after injection of air. In these cases the diaphragm is either motionless or it presents the phenomenon of Kienböck—that is, the affected side rises on inspiration and descends on expiration. Cure will not take place until the diaphragm resumes its normal motility. The relationship is not yet quite clear, but Weil believes that the resumption of function by the diaphragm depends on the healing of the pleura. The return of diaphragmatic movement is, therefore, of great prognostic importance. Respiratory gymnastics are practically useless—they simply increase the range of the healthy side. Electrical stimulation is also a failure. The condition is found almost exclusively in pleural effusion of tuberculous origin.

G. E. NESBITT.

CHEINISSE, L.: *Citrate of Soda in the Treatment of Pneumonia and Broncho-pneumonia.* "La Presse Medicale." February 14, 1920.

THE employment of citrate of soda in pneumonia was advocated by Weaver in the *New York Medical Journal* (November, 1919). Forty-seven cases were treated, forty-five successfully. The two failures were an alcoholic of sixty-five and a woman of ninety-one! Its main action is probably in diminishing the viscosity of the blood and restoring pulmonary circulation. Cheinisse thinks increased alkalinity an important factor.

The dose recommended is about one gram every hour, day and night, given with plenty of water. Any purgative tendency should be corrected if necessary.

G. E. NESBITT.

GUEIT, C.: *Electrargol in Influenzal Pneumonia and Broncho-pneumonia.* "Gazette des Hôpitaux." February 24, 1920.

GUEIT'S paper deals mainly with the effect on leucocytosis of intravenous injections of electrargol, and is based on a series of fifty-nine cases. The injection is followed in an hour or two by a polynuclear leucocytosis, which persists for twenty-four hours or so. He thinks that the reaction is of value in prognosis, as in favourable cases it was pronounced, while in grave cases it was poor and not appreciable after twenty-four hours. [Details of the leucocyte counts are not given.]

G. E. NESBITT.

FRY, S.: *An Epidemic of 54 Cases of Relapsing Fever observed in Borjand, East Persia.* "Indian Medical Gazette." January, 1920.

INFECTION was mainly effected by lice. Two cases were infected by bed bugs. One spirillum was found by staining the smear made by crushing a louse.

Symptomatology.—Onset sudden with rise of temperature. Usual febrile symptoms, pain in the lumbar region frequent. Vomiting occurred in six cases, epistaxis in five cases. The outstanding symptom was severe frontal headache which occurred in some atypical cases after the onset. The spleen was enlarged as a rule, and became palpable during the first relapse. Liver enlarged in fifty per cent. of cases. One case was jaundiced. The blood showed an increased percentage of large mononuclears, and the spirillum increased as the fever progressed, and became more numerous in the relapse, varying in length from 10 to 30 microns. The shortest period of pyrexia was three days, and the longest ten and a half days. In 14 cases a relapse occurred after an average

interval of nine days. The pyrexia was much shorter in the relapse than in the initial attack, otherwise the symptoms were more marked. The most important sequela was anæmia.

Treatment.—Arsenobillon was used intramuscularly, .6 gm. being given in the buttocks. Other treatment was symptomatic. One case was fatal after a full dose of arsenobillon. The paper is accompanied by charts.

J. Speares.

McDonagh, J. E. R.: *Early Nervous Syphilis after Arseno-benzene.* "British Journal of Dermatology and Syphilis." February, 1920.

The author claims that since the advent of arseno-benzene there has been an increase of nervous syphilis, and that these nervous conditions are due partly to the disease and partly to the remedy.

He describes, in considerable detail, both the clinical aspect and the pathology of some of the conditions, including pareses of various cranial nerves, hæmorrhagic encephalitis, both early and late, and cerebral and spinal meningitis.

He recommends the following measures in order to prevent such unhappy complications:—Colloidal iodine should be injected before arseno-benzene is administered; intramine should be given in the course of arseno-benzene; all the injections of the latter that it is intended to give should be prescribed in one course; mercury should be avoided simultaneously with arseno-benzene; every case of syphilis should be treated intermittently, for two years after the course, with mercury, intramine and colloidal iodine.

In the treatment of meningitis, drainage is advised and intra-spinal injections condemned. "Injecting a drug intraspinally is like putting something into the mouth of a river and expecting it to sterilise its whole course."

J. W. B.

House, W.: *Epidemic (Lethargic) Encephalitis.* "Jour. Amer. Med. Assoc." February 7, 1920. P. 372.

House reviews in this paper thirteen cases seen in the Pacific North-West. He regards the disease as not contagious, as he has not seen two cases in one household. He recognises two types of invasion—slow and rapid—the former being the more common. Amongst prominent symptoms of the fully-developed case, he places euphoria first. All the patients declared they felt well! Apathy, rather than lethargy, double vision accompanied by paresis of various ocular nerves, and occasionally of other cranial nerves, particularly the seventh, moderate temperature during

the first week, and a peculiar type of rigidity (" waxy flexibility ") were fairly constant findings. Two cases were of particular interest from unusual involvement of cranial nerves. The patient, a woman of thirty, had pulse-rate of 160 and shallow, irregular respirations with cyanosis. This case died in four or five days, apparently as a result of paralysis of the cardiac and respiratory centres. The other lost the power of swallowing, and had to be fed by nasal tube.

Four cases of the series died, and one was still in danger. Treatment was symptomatic.

G. E. Nesbitt.

Page, M. : *Lethargic Encephalitis and Tuberculosis.* " Gazette des Hôpitaux." January 31, 1920.

Page inclines to the belief that lethargic encephalitis is merely a syndrome capable of being produced by various toxins. He cites at length two cases of tuberculous disease in which well-marked signs of encephalitis appeared and cleared up, while the tubercular process continued to run its course.

G. E. Nesbitt.

Low, G. C., and Newham, H. B. G. : *A Series of Cases of Bilharziasis Treated by Intravenous Injections of Antimonium Tartaratum.* " Lancet," October 11, 1919.

Fairley, N. H. : *A Report of Three Cases of Bilharziasis Treated with Tartar Emetic.* " Med. Jour.," Australia, December 20, 1919.

Elgood, B. S., and Cherry, T. : *Bilharziasis; Its Incidence and Eradication.* " Lancet," October 11, 1919.

The first two papers appear to establish the efficacy of Christopherson's method (see *Lancet*, September 7th, 1918), which was suggested by M'Donagh.

Low and Newham give intravenous injections of tartar emetic twice weekly, each dose being diluted in a pint of normal saline. Beginning with half a grain, the dosage is very gradually increased to two and a half grains.

A total quantity of from 20 to 30 grains should be sufficient. The duration of treatment is from two to three months.

The patient is kept in bed on the day of injection; rigors may occur, and paroxysmal cough immediately after the injection is not uncommon. It may often be relieved by sipping cold water. Albuminuria, if it is part of the disease, does not contraindicate injection.

In one of Fairley's three cases the *total* dosage amounted to three grams (over 45 grains). He dissolves each dose in 10 c.cs. of normal saline (*cf.* the dilution in one pint given above). Also his injections are made on alternate days instead of twice weekly, and the dosage of tartar emetic is increased by .03 grams (½ grain) at *each injection* until the two and a half grain limit is reached. Though his final results were excellent, the patients all lost weight (6 to 10 lbs.) during treatment, and all felt poorly. Ova disappeared from the urine after a total of from 0.42 to 0.48 grams of tartar emetic had been given. In each case the complement deviation reaction tended to become negative, indicating a specific effect upon the worms. The eosinophilic curve rose during treatment and fell afterwards.

The following practical points are emphasised :—(1) Injections should be made not less than two hours after food; (2) Severe local inflammation may result from escape of the injected fluid into the perivascular tissues; (3) All constitutional symptoms must be carefully recorded and the dosage modified accordingly.

Elgood and Cherry point out that the Bilharzia parasite requires (1) a suitable snail to act as intermediate host, and (2) warmth and a scanty water supply. They believe that as the cercariæ do not multiply after escaping from the body of the snail-host, they are so diluted in large bodies of water, such as rivers and canals, as to be harmless. From the point of view of infection, the danger-spots are the small channels running through fields. The authors suggest that the disease might be eradicated by using ducks to destroy the snails, pointing out that in the Gizeh Gardens in Cairo the only pond where snails abound is untenanted by duck.

CAMMIDGE, P. T. : *Estimation of Sugar in the Blood.* "Practitioner," February, 1929. P. 114.

CAMMIDGE holds that the estimation of blood sugar is essential in the diagnosis and treatment of diabetes mellitus. Three methods of performing this difficult process are mentioned—the picric acid method of Lewis and Benedict, another described by Folin and Wu in the *Journal of Biological Chemistry*, 1919, and a titration method with thiosulphate advocated by Cammidge in 1917. An advantage of each is that only small quantities (0.2 c.c.) of blood are required. He lays stress on the fact that the normal amount of sugar in the blood varies considerably between 0.06 and 0.14 per cent., the proportion depending mainly on the nature of the food and the time of obtaining the specimen. It reaches a maximum about three hours after a mixed meal, and falls to fasting level in one and a half to two hours. In diabetes the curve is similar, but higher and more prolonged. In severe cases a permanent hyperglycæmia occurs, and may reach 0.4 or 0.5 per cent.

He recommends the use of a morning test meal containing 70 gm carbohydrate, 50 gm. fat, and 25 gm. protein. Hourly estimations of blood sugar for five or six hours will indicate the carbohydrate tolerance.

There appears to be no definite relationship between the percentage of sugar in the blood and that in the urine, hence estimations of the latter alone are unreliable. Hyperglycæmia may occur without glycosuria sufficient to give the ordinary tests. The reverse condition is also found, and includes two types, one of "latent diabetes," described by Reicher, and the other of "renal diabetes," in which the blood sugar curve is entirely normal, the kidneys apparently possessing an increased permeability for sugar.

Permanent success in the treatment of diabetes can be secured only by keeping the blood sugar within normal limits. Excess of fat or protein in the diet often seems to increase it. Hyperglycæmia is also found in some other conditions; for example, in the late stage of nephritis, when it is of grave import, in cases of high blood-pressure, and in carcinoma. In the latter instance the blood sugar estimation might help in diagnosis.

G. E. Nesbitt.

Langmead, F.: *Case of Lipodystrophia.* "Proceedings of the Royal Soc. of Med." December, 1919.

Parkes Weber and Gunewardene: *Sequel of the Case of Lipodystrophia Progressive*, shown on January 24, 1919; with Microscopical Report by H. M. Turnbull. "Brit Jour. of Children's Diseases." October-December, 1919.

Langmead's patient, a girl of seven, was in good health until Christmas, 1917, when she was first noticed to show slight wasting. Two months later, after an attack of measles, this wasting progressed rapidly. The child was then confined to bed for six weeks with acute rheumatism, and at the end of that time the condition had become so remarkable as to lead to her admission to hospital. On examination, wasting was found to be limited to the head, neck and body, above the level of the umbilicus; the arms being affected to a less degree. The condition of the thorax and abdomen became progressively less in a downward direction, and the lower limbs were normal. The disappearance of fat was accompanied by no loss of power, and the child's general health was good, so that the unpleasant cosmetic effect was the only disability entailed.

Parkes Weber and Gunewardene report the autopsy on a case of Lipodystrophia progressiva. Death was due to intercurrent pyæmia. Fat was almost completely absent from the subcutaneous

tissue of the body above the pelvis. A moderate amount of fat was present in the gluteal regions, orbits, and thoracic and abdominal organs, and under the serous membranes. Apart from the absence of fat, a left empyema and pyæmia with parenchymatous nephric, hepatic, and splenic changes, nothing abnormal was found either macro- or micro-scopically, except a relatively large thyroid very rich in colloid. Fat atrophy in the parts specially affected was more extreme than is found in the most wasted subjects of chronic pulmonary tuberculosis; nevertheless, the authors remark that persons with Lipodystrophia progressiva as a rule enjoy good general health.

D. K. M. H.

JENNINGS, C., HAAS, E., and JENNINGS, A. F.: *An Outbreak of Botulism*. "Jour. Amer. Med. Assoc." January 10, 1920.

THE cause was ripe olives from which the *Bacillus botulinus* was isolated, the fluid from the olives being lethal to guinea pigs. Eight persons ate the olives. Of these, five died, two were slightly ill, one escaped.

The following were points in the clinical history:—Gradual onset, difficulty of vision—this was the first symptom in the five cases—headache, vomiting, abdominal pain, diarrhœa, and collapse. The symptoms began, on the average, inside thirty-six hours. Neurologic symptoms were mostly confined to the cranial nerves. Temperature was normal, pulse rapid. The writers point out that cranial nerve paralyses were constant in their series, and also a variation in the time of onset.

It is stated that anti-botulinus serum, to be of value, must be used early. Gastric lavage, cathartics, sedatives, &c., are recommended.

J. SPEARES.

PARDEE: *Notes on Digitalis Medication*. "Jour. Amer. Med. Assoc." December 13, 1919.

VOMITING was the chief indication for stopping the drug, which was given in two courses—the first until toxic symptoms appeared, and a second course after an interval. Twenty-two minims of standardised tinct. digitalis represented the average rate of disappearance per day. The results tend to show that on the average 10 minims of the tincture twice daily is sufficient to maintain "the digitalis effect." He emphasises the therapeutic importance of idiosyncracy. "When a patient does not react to the usual dose of the tincture, it does not necessarily mean that the tincture is weak—the patient may not have a high susceptibility,

or the drug may have been given so as to do little more than keep pace with its disappearance."

J. Speares.

DERMATOLOGY.

Adamson, H. G.: *Three Cases of Lichen Planus in Children.* "British Journal of Dermatology and Syphilis." January, 1920.

Adamson can only find four cases of true lichen planus in young children on searching the literature. He now describes three other cases from his own practice:—(1) A patch of lichen planus et pilaris on the forearm of a girl of three and a half years, said to have been present since a few months after birth. (2) A linear lichen planus in a boy of eight years, extending from the right buttock to the right heel, and disappearing in a couple of months after its onset. (3) Extensive lichen planus coming on suddenly in a baby of two years.

W. G. Harvey.

Rutherford, W. J.: *Notes on an Epidemic of Alopecia.* "British Journal of Dermatology and Syphilis." January, 1920.

Out of 1,238 cases of illness in civilians and demobilised soldiers from the area uncovered by the German retreat of 1918, no less than 2.2 complained of copious falling out of the hair. This number is vastly in excess of the normal percentage. Misery and the chagrins of the German occupation were a common factor, and were probably of causal importance. Severe and exhausting illnesses were a prelude in a minority of cases. In three there was a definite history of influenza, while it may well have occurred in others. But the prime cause in all these cases was the long nervous strain and years of impaired nutrition.

Of the twenty-seven cases, two were definitely alopecia areata. In two others there was a seborrhœa capitis, leaving twenty-three others, only one of which occurred in a male.

W. G. Harvey.

BACTERIOLOGY.

Bloomfield, A. L.: *The Fate of Bacteria Introduced into the Upper Air Passages. 2. B. coli and Staphylococcus albus.* "Johns Hopkins Bulletin." January, 1920. No. 347.

Bloomfield has shown in a previous communication that *Sarcina*

lutea is destroyed by the secretion of the mouth and the saliva, and that after swabbing massive quantities on the tongue, nasal septum and tonsilar crypts it is impossible to recover the organisms after two hours. He has also demonstrated an *in vitro* bactericidal effect of the mouth secretions for this organism. In the present communication the organisms used were *B. coli* and *Staphylococcus albus*. The experiments were done in the same way. Massive doses were swabbed on the tongue, nasal septum, and into a tonsilar crypt, a series of cultures were made at intervals during forty-eight hours. Positive cultures were obtained at the first examinations, but in the case of the tongue and nasal septum at the end of twenty-four hours cultures could not be obtained, or else the colonies were so few that the results approached those obtained from normal controls. In the case of the tonsilar crypts the organisms persisted for forty-eight hours. No bactericidal effect could be demonstrated in the mouth secretions for either of these organisms, and an investigation was made as to the fate of inert particles such as Kieselguhr. This substance, used in the same way as the microbic emulsions, disappeared equally rapidly. Bloomfield believes that mechanical action normally removes bacteria, and that the flora of the mouth is probably a transient one. The article is interesting and suggestive.

A. S.

CHURCHMAN, J. W.: *Selective Bacteriostasis in the Treatment of Infections with Gentian Violet.* "Jour. Amer. Med. Assoc." January 17, 1920.

THE author applies the term "bacteriostat" to a substance which kills or inhibits the growth of bacteria. The paper shows the effect of gentian violet when added to the medium used in laboratory cultures of micro-organisms. It is stated that the dye is more effective in killing or in inhibiting the growth of Gram-positive organisms (such as *B. diphtheria* or *staphylococci*) than Gram-negative bacteria (*B. coli* for example).

The dye (in saturated aqueous solution) has been used in surgical procedure in dealing with wounds, especially those secondarily infected with *B. diphtheriæ*, and in the sterilization of limb stumps in cases where Dakin's solution could not be tolerated. The necessity of removing all dead and fibrinous material in the wound before applying the dye to the clean granulations is emphasised. A number of cases successfully treated by this method are described.

J. W. B.

PHYSIOLOGY.

KENDALL, E. C.: *Internal Secretions.* "Jour. Biolog. Chem." 1919. Pp. 35, 125. ABEL, J. J., and KUBOTA S. "Jour. Pharm. Expt. Ther." 1919. Pp. 13, 243.

DAVIS, L., and MERKER, H. M.: *Enzymes.* "Jour. Amer. Chem. Soc." 1919. Pp. 41, 222. ABELOUS, J. E., and ALOY, J. "Compt. rend." 1919. Pp. 168, 1125.

BAYLISS, W. M.: *Blood.* "Jour. Physiol." 1919. Pp. 53, 162.

Internal Secretions.—Work on the chemistry of thyroxin, the active principle of the thyroid gland, has been proceeding rapidly. Kendall has described in detail the isolation of this body in his latest paper, and it is probable that the constitution of thyroxin will soon be as well established as that of adrenalin.

The formula suggested for thyroxin is tri-iodo oxy-tryptophane, which, if correct—the necessary experimental data have not yet been published—points to the amino acid tryptophane as being the probable precursor. Tyrosine has already been considered to be the precursor of adrenalin, and if the constitution of thyroxin be closely related to tryptophane, we have an explanation for the great importance of this amino acid in the diet.

Histamine has been found by Abel and Kubota in small quantities in the pituitary gland. This substance has long attracted attention on account of its powerful physiological action, but it is very doubtful if it is the cause of all the properties of the pituitary, especially that of being a specific stimulant of plain muscle. The formation of histamine from the amino acid histidine by bacterial action or autolysis during the drying of the pituitary gland must not be overlooked.

Enzymes.—Pepsin has been purified by Davis and Merker, who consider the possibility of the enzyme being a gluco-protein. As is well known, the difficulties of separating an enzyme from associated substances are very great. As the process of purification is carried out, the enzyme generally becomes weaker and weaker, and it is often hard to decide if this decrease in activity is due to the removal of the enzyme itself or of substances which assist in the reaction—*e.g.*, activators and co-enzymes. Attempts to remove the proteins associated with the urease in soya bean by submitting the preparations to the actions of pepsin and trypsin have led so far to indefinite results.

A paper on the *mechanical* hydrolysis of sucrose has appeared by Abelous and Aloy. These investigators found that when a sucrose solution is passed several times through a *pulveriser* some of the sugar is hydrolysed. This effect is increased by traces of

metals such as zinc and manganese, but is retarded by enzyme "poisons" like potassium cyanide.

A great deal of research has been going on in connection with the true reactions of solutions and their effects on enzymes and bacterial growth. The human body is extraordinarily sensitive to changes in reactions. We are "tuned" to a certain concentration of hydrogen ions, and an elaborate mechanism has been evolved to keep us at that concentration. Why are the cells of the body so sensitive to changes in electrolyte?

Benjamin Moore provides an answer in the current number of the *Journal of Physiology*. The reaction of the body fluids is such that the colloids are kept in the most instable condition possible under the circumstances of life, and consequently these colloids are very reactive. Excess of acid or alkali locks the colloids in one state or another, and they cease to function as labile systems.

The Blood.—Bayliss has contributed a most valuable paper on the neutrality of the blood, and has cleared up a great deal of confusion on the subject of the part played by the alkalies of the plasma. Following up the work of Moore and his colleagues, and Parsons, we may summarise the functions of the various constituents of blood as follows:—

(1) Proteins of the plasma; maintain viscosity and general colloidal condition.
(2) Sodium bicarbonate system; serves to regulate the hydrogen ion concentration.
(3) Red corpuscles; convey oxygen *and* carbon dioxide.

Bayliss could obtain no evidence that either sodium bicarbonate, serum proteins, or both together, convey carbon dioxide from the tissues to the lungs.

W. R. F.

ROYAL ACADEMY OF MEDICINE IN IRELAND.

President—Sir John Moore, M.D.Dubl., F.R.C.P.I.
Secretary—J. A. Scott, M.D., F.R.C.S.I.

SECTION OF PATHOLOGY.

President—T. T. O'Farrell.
Secretary—J. H. Pollock.

Friday, January 9, 1920.

Dysentery in Dublin.

Professor Stokes and Dr. Bigger read a paper on "Dysentery in Dublin." (See *Dublin Journal*, March, 1920, p. 3.)

Sir John W. Moore, in heartily congratulating the authors of the communication, stated that he had himself attended the first case of the epidemic.

Dr. Drury said he regarded sulphate of soda as a valuable remedy. Whilst admitting the rapid disappearance of toxic symptoms under serum treatment, he nevertheless preferred sodium sulphate as a curative agent. One family of cases under his care all developed monarthritis. He alluded to possible seasonable recurrence, and of the disease becoming endemic.

Professor O'Sullivan stated that the possibility of healthy carriers might be ruled out. The persons to isolate were chronic sufferers with intermittent recurrences. He did not regard mucus as an essential feature of the stools.

Dr. Gahn gave some clinical experiences from Cork Street Fever Hospital. Out of 45 cases 5 were fatal, and of these 3 were as follows.—(1) Patient aged 75 years. (2) Cause of death, lobar pneumonia; meningitis supervened during convalescence. (3) Infant aged one and a half years. He considered only two could be regarded as true deaths from dysentery. As regards therapeutics, he found that any intensive administration of sodium sulphate induced vomiting. He did not find any particular advantage derived from serum administration. Tannic acid and intestinal sedatives by a high rectal tube gave good results, and morphia was valuable.

Dr. O'Kelly drew attention to the necessity of localising the epidemic.

Professor Stokes and Dr. Bigger replied, and the proceedings terminated.

SECTION OF STATE MEDICINE.

President—R. J. Rowlette, M.D.

Secretary—E. G. A. Webb, M.D.

Friday, February 6, 1920.

The Problem of the Voluntary Hospitals in Dublin.

Dr. Rowlette read a paper on "The Problem of the Voluntary Hospitals in Dublin." (See *Dublin Journal*, March, 1920, p. 9.)

Sir Henry McLaughlin said he would approach the subject from the business man's point of view. He might say in such a view he felt the hospital system was not one to be proud of. Holding to the opinion that the voluntary hospitals were for the *poor*, he would be against raising the payments from the patients. He admitted he had never taken any very particular interest in the hospitals till this financial crisis occurred. He stated that Ireland stood higher as to trade contributions than the North of England and London, but trade would not give large support unless they had some management, and would not pass much of the conditions for the nurses, &c., at present in existence. He considered that centralisation would bring economy and a larger voluntary contribution. He believed that voluntary support would be able to keep up the hospitals if the public were really proud of them, which the ordinary business man or large employer is not. He did not consider the question of distance important if the hospital was on a through tramway service, which many of the hospitals are not. He thought it was the right time to decide the question, for the value of the hospitals which could be given up would be very great. He thought £250,000 would cover the whole scheme, and he was sure the public would back it up to this amount.

The President of the Royal College of Physicians gave a table showing the number of beds and the expenditure of the various hospitals, making in all 3,200 beds. These cost more than a quarter of a million, and the poor law hospitals are not included in this.

Dublin had 2,000 beds, Glasgow 1,600 beds, and Belfast 750 beds for teaching purposes. He thought there were an unnecessary number of beds. He instanced that the Corporation pay £30,000 for Crooksling, the Pigeon House, and Charles Street, which sum was unnecessarily large for such small institutions. He did not consider a large number of beds necessary for teaching. Corrigan had only ten beds. He thought there were too many consultants in Dublin. He suggested that a commission should investigate the whole matter.

Sir Arthur Chance related that in 1885 there was a commission which showed that out of £85,000, £25,000 was spent on mainten-

ance. The commission strongly advocated amalgamation. Now things had come to a crisis, so that the boards of the hospitals, though opposed to change, must now see that the hospitals must atrophy if nothing is done. He spoke in favour of amalgamation. Nothing in the way of research had come of the past system, for no man had enough material. As to State aid, whoever paid the money would govern the hospital. The State had already done a great deal regarding venereal diseases, children, &c. He thought that the ideas of the Government on health and housing were at present so strong that if there was a really efficient system established they would pay for it. If we establish a large amalgamated hospital it would be for future generations.

Dr. Ninian Falkiner said he thought it very important to get the small sums from the patients. He instanced the Warrington Nursing Institution, the expenditure of which was £659; £311 of this was contributed by the workingmen's committee, who had a voice on the committee of the institution.

Dr. Crofton said he thought the time for voluntary contributions was past. Three million people are being treated free, which is absurd, and the insurance societies have been able to save three million pounds. He said doctors gave half their time and skill as a free gift to the State.

Sir Lambert Ormsby said that amalgamation was far distant. What they wanted for their present pressing overdraft was a scheme to help the hospitals at the moment.

Sir John Lumsden thought that the time for amalgamation was come. He felt sure that the joint societies of Red Cross and St. John would help, and he would bring the matter before his committee when there was something definite to put before them. Ireland had got no grant for hospitals from England, but the societies had some money, though not much, which they would be prepared to allocate, but they had many schemes of their own. He hoped money might be got from England, but only if there was a definite plan to put before them.

Dr. Parsons stated a bed in Dublin cost £80 and in London £150, so small hospitals were sometimes economical. He considered research could be done better on a small number of beds, for one had time to attend to them. Research could be done if men were paid for whole-time work. He emphasised the importance of dispensaries, and said in a large distant hospital these cases would be lost.

Mr. Wm. Taylor, Dr. Myles Keogh, and Mr. F. Burke also spoke.

Dr. Rowlette, in reply, stated that with regard to the question of trade union contribution, it was difficult in Dublin as there were not many large employers of labour, and much of the labour was casual.

SECTION OF ANATOMY AND PHYSIOLOGY.

Friday, February 13, 1920.

Mr. Fearon read a paper on—(*a*) Modification of the Kjeldahl Method for Estimating Nitrogen in Urine and Physiological Fluids. (*b*) The Carbazole Test for Nitrites. (*c*) A New Test for Tryptophane. (This paper appeared in the *Dublin Journal* for March, 1920.)

Sir John Moore thanked the author for his paper, which he said was well linked together, a very original research, and one well worth the attention of scientific physicians.

Professor Collingwood asked what evidence there was to show that the colour test for tryptophane was due to tryptophane, and not to indol or scatol? Also, how the addition of phosphoric acid helped the reaction in the modification of the Kjeldahl method, and if his tests had been made on a long series of urines?

Professor Adrian Stokes inquired as to the delicacy of the test for nitrites. Would it detect amounts that could not be determined by the usual tests? He said that the anaerobe Sporogenes should give a positive result with the nitrite test, and if Mr. Fearon would provide him with the reagents he would provide the Sporogenes.

Dr. T. T. O'Farrell asked what were the clinical applications of the tests.

Dr. Parsons had done Kjeldahls in many cases using 5 c.cs. of urine. He thought the experimental error would be very great due to using such small quantities when the fact that a man passed 1,500 c.cs. per diem was taken into consideration.

Mr. Fearon, replying, said that after trying various other things he had found glacial phosphoric acid, as recommended by Benedict, most satisfactory. He believed that molten phosphoric acid acted as a solvent for the salts. Regarding quantities, he found it more satisfactory to work with small amounts, even .5 c.cs. urine, using four controls in each case. His results were always extremely close. The delicacy of the carbazol test was one in half a million; it showed the presence of nitrites which could not be detected by Bismarck Brown, and should, therefore, be of practical use in bacteriology. He had examined enough urines to show that tryptophane was occasionally present. It was possible to make colourimetric analyses which should be useful in cases of chronic constipation, eclampsia, &c. The metabolism of tryptophane in the body was very important, and he hoped shortly to publish a paper on the subject.

The Vertebral Epiphyseal Plates.

Professor A. F. Dixon contributed a note on the epiphyseal plates in mammals. He exhibited specimens to illustrate that in man and in other mammals the heads of the ribs articulate with these plates and not with the bodies of the vertebrae.

OBITUARY

ADAMSON, JAMES. Died February 13, 1920. Born at Ballydonghan, Co. Down, 1843. Educated in Belfast; M.D. Glasgow, 1869; L.R.C.S. Edin., 1869; Medical Officer to the Hetton and North Hetton Collieries, and late M. O. H. for Hetton Urban District Council.

BOYD, JOHN ALEXANDER. Died January 22, 1920. Born at Carntree, Co. Antrim. Educated at Queen's College, Belfast; M.B., B.Ch., B.A.O., R.U.I., 1907; late Assistant Medical Officer, Birmingham City Asylum. In practice at 63 Upper Gloucester Place, Regent's Park, London.

CARROLL, PATRICK MORDAUNT. Died March 9, 1920. Born in Dublin; L.R.C.P., L.R.C.S. Edin., and L.R.F.P.S. Glasgow, 1912; Capt. R.A.M.C. Died in Edinburgh.

CHURCHILL, CHARLES FLEETWOOD. Died March 19, 1920. Born in Dublin, April 10, 1841. Educated at Steevens' Hospital and Trinity College, Dublin; M.B., 1863; L.R.C.S.I., 1863; Surgeon, Army Medical Department, March 31, 1864; Surg.-Major, April 28, 1876; Brigade-Surgeon, February 6, 1889; Surgeon-Colonel, April 14, 1894. Died at Camberley.

CUFFEY, Edward. Died, February 25, 1920. Educated at Trinity College, Dublin; M.B., M.Ch., M.A.O., R.U.I., 1888; Medical Officer, British Hospital, Port Said; O.B.E. Died at Port Said.

DAVYS, LAURENCE LIONEL. Died March, 1920. Educated at St. Vincent's, the Meath Hospital, and the Royal College of Surgeons; L.R.C.P. & S.I., 1915; Medical Officer, Loyell's General Dispensary, Birmingham. Died at Birmingham of pneumonia.

DOCKRELL, BENJAMIN MORGAN. Died March 15, 1920. Born in Dublin. Educated at Steevens' Hospital and Trinity College, Dublin; M.B., B.Ch., M.A.O., 1882; M.A., M.D., 1887, Dub.; Senior Physician, St. John's Hospital for Diseases of the Skin, London; President of the London Dermatological Society. Died in London.

HUNT, JOHN PERCIVAL. Died March 3, 1920. Born at Gort, Co. Galway, October 29, 1844. Educated at Glasgow University and St. Thomas' Hospital, London; L.R.C.S.I., 1864; L.R.C.P.

Edin., 1864; M.D. Glasgow, 1872; L.R.C.S.I., 1872; Surgeon, Army, February 4, 1877; Surgeon-Major, January 26, 1890; Lieutenant-Colonel, February 4, 1897; served in the Soudan, 1885-1886; Barrister-at-Law of Lincoln's Inn, called 1884. Died at Bath.

MURPHY, FRANCIS. Died February 13, 1920. Educated at Queen's College, Cork; L.R.C.P., L.R.C.S. Edin., L.R.F.P.S. Glasgow, 1888; L.A.H. Dub., 1889; Temporary Captain, R.A.M.C.; awarded Cross, "Pro Ecclesia et Pontifice," 1901. Died at Military Hospital, Chisledon, of heart failure.

PINKERTON, JAMES. Died February 16, 1920. Born 1862. Educated at Queen's College, Belfast; M.D., M.Ch., R.U.I., 1881; late Hon. Medical Officer of the Birkenhead and Worral Children's Hospital. Died at West Kirby.

REYNOLDS, JAMES EMERSON. Died March 19, 1920. Born at Booterstown, Co. Dublin, January 8, 1842. Educated at the Royal College of Surgeons, Ireland; L.R.C.P. & S. Edin., 1865; L., 1873; M.K.Q.C.P.I., 1885; M.D. (*Hon. Causâ*), 1876; D.Sc. (*Hon. Causâ*), 1891; F.R.S., 1880; Professor of Chemistry, Royal College of Surgeons, 1873; Professor of Chemistry, Trinity College, 1875-1903. Died in London.

WOODS, FREDERICK JAMES. Died March, 1920. Educated at Queen's College, Belfast; L.R.C.P., L.R.C.S. Edin.; L.R.F.P.S. Glasgow, 1889; late Civil Surgeon, R.A.M.C., and Surgeon, R.M.S. "Oruba" (Orient Line). Died at 69 Lower Gardiner Street, Dublin

THE

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THE TRANSACTIONS OF THE ROYAL ACADEMY OF MEDICINE IN IRELAND

FOURTH SERIES. No. 3 MAY 1920

ORIGINAL COMMUNICATIONS

OIL ETHER COLONIC ANÆSTHESIA.[a]

By ALFRED E. BOYD, M.B., D.P.H.;
Anæsthetist, House of Industry Hospitals, Dublin.

Before dealing with the subject of rectal or, more properly, colonic etherisation, let me remind the Academy that the administration of ether, or of ether vapour by the colon, is no new thing. First suggested by Roux, it was practised as far back as 1847, by Pirogoff, of Petrograd. Liquid ether sometimes mixed with water was first used, but this was subsequently abandoned in favour of the employment of ether vapour.

The method fell into disuse in consequence of the dangers it involved. It was revived by Molière in 1884: he immersed ether in a container in water at 122° F.,

[a] Read before the Section of Surgery of the Royal Academy of Medicine in Ireland, April 9, 1920.

and administered the vapour *per rectum* through a rubber tube. Later, Cunningham, of Boston, employed air as the method of conveying ether vapour into the bowel, using a Richardson spray apparatus for the purpose. In the 1907 edition of Buxton's "Anæsthetics," this author states that he has used the method fairly extensively for operations about the mouth, for operations for the relief of empyema, for the removal of the tongue, for excision of the jaw and for plastic operations about the face, but he adds that he has met with grave complications; and in writing of the after-effects, he says:—"Colicky pains in the intestines, urgent tenesmus, diarrhœa, sometimes dysenteric in character, painful distention of the intestinal tract with more or less severe collapse, are complications which have been recorded; deaths have occurred."

Buxton's method of administration consisted in the generation of ether vapour by heat, and its direct conveyance under its own power to the intestines—a method essentially similar to that practised by Pirogoff sixty years before the appearance of Buxton's work. Bull in the *New York Medical Record* reported seventeen cases, in seven of which melena supervened. In 1884 Weir, of New York, reported a fatal case, and Cunningham reported another in which the cause of death was general peritonitis.

It is not necessary to enter further into the history of colonic etherisation—a full record of which, with details of technique and descriptions of apparatus sufficiently complex to satisfy the most fastidious, will be found in Dr. Walter Sutton's article on the subject in Gwathmey's "Anæsthesia," 1914, pp. 411-457. It is sufficient to say that the list of complications noted and the fatalities recorded precluded the method coming into general use.

The introduction of oil ether colonic anæsthesia, the subject of this communication, is due to Dr. J. T. Gwathmey, of New York.

Experimental work in regard to colonic etherisation was being carried out at Bellevue Hospital Medical College under the supervision of Professor Wallace. In one case about 500 cubic centimetres—say, 17½ ozs.—of a 5 per cent. solution of ether in normal saline was slowly in-

jected into a dog's colon. A mild stage of excitement ensued. This passed into complete anæsthesia which continued for thirty minutes. There was a watery discharge from the rectum during recovery, but no diarrhœa ensued on the following day. The experiment was repeated on a second dog, but complete anæsthesia was not obtained. It occurred to Gwathmey to suggest the use of a solution of ether in oil instead of in normal saline, in order to diminish the volume of the injection. This suggestion was adopted. In one experiment after a dose of morphin, 100 c.cs. of ether in 250 c.cs. of olive oil were administered to a dog of 10 kilogs. (weight 22 lbs.). The animal was completely narcotised in one hour. Anæsthesia persisted with a good pulse and regular deep breathing for forty-five minutes, when the breathing became short and irregular. Respiratory failure occurred fifteen minutes later, and the dog died. In two other experiments in which no morphin was given, one dog—6 kilogs. (13.2 lbs.)—received 150 c.cs. of a 40 per cent. ether solution and one of equal weight 190 c.cs. of a 40 per cent. solution. In neither was complete anæsthesia obtained. Accordingly in the remaining experiments the ether was given in solution in oil from 55 per cent. to 75 per cent. strength, the amount injected being from 50 c.cs. to 75 c.cs. Ten experiments were carried out with complete anæsthesia, and no untoward symptoms. The shortest time required to procure surgical anæsthesia was five minutes, and the longest fifty minutes—a rather remarkable margin.

These experiments formed the basis of Gwathmey's subsequent work on the human patient. He brought the subject of oil ether anæsthesia before the Seventeenth International Medical Congress in London in 1913; the first successful administration to the human patient was made at the People's Hospital, New York, in September of that year.

As has been noted, oil solution was suggested primarily with a view to reducing the volume of the fluid injected. It has other advantages. Ether is miscible in oil in all proportions; the oil in some degree prevents local irritation, and its great affinity for ether prevents too rapid absorp-

tion of the latter, the ether leaving the oil fairly uniformly as vapour.

Gwathmey's technique is as follows:—A cathartic of castor oil is administered on the night preceding operation, followed in the morning by enemata given hourly until the return is clear.

An hour before the introduction of the oil ether mixture chloretone gr. 5-20 in a suppository or in solution is administered per rectum. Two to four drams of paraldehyde in an equal quantity of olive oil may be given instead of the chloretone. Half an hour after the chloretone or paraldehyde has been given, morphin gr. $\frac{1}{4}\frac{1}{2}$ - $\frac{1}{4}$, with atropin gr. $\frac{1}{2}\frac{1}{0}\frac{1}{0}$ - $\frac{1}{1}\frac{1}{0}\frac{1}{0}$ is administered hypodermically. Twenty minutes after the hypodermic injection, the oil ether solution is run into the colon, the apparatus required being a small catheter, a funnel and a measure. The mixture is run in slowly, allowing, say, one minute for each ounce. The patient lies in bed in the Sim's position. As regards dosage, the preliminary medication, the percentage and the amount of the mixture vary with the size and general condition of the patient. A 50 per cent. to 60 per cent. solution is sufficient for children and weak, anæmic adults, while a 75 per cent. solution is usual with normal adults. This should never be exceeded.

The amount of mixture to be given is roughly one ounce for every 20 lbs. body weight of the patient; it should never exceed eight ounces regardless of the patient's weight. No preliminary medication is needed for children under nine years of age. Eight ounces of the 75 per cent. mixture will cause the anæsthesia to last from two and a half to three hours.

When operation procedure is over, the patient is returned to bed, and the remainder of the solution washed out of the colon. When the washing is completed four ounces of olive oil are injected and left in the bowel.

As regards control, it is laid down that "if the patient approaches the danger zone, as indicated by loss of lid reflex, slight cyanosis or stertor, withdrawal of the mixture remaining in the colon will usually remedy the trouble immediately. If this is insufficient a Connell

breathing tube will usually lighten anæsthesia. If this does not suffice the patient may be restored by the intravenous injection of 1,000 c.cs. to 2,000 c.cs. normal saline solution. If respiratory arrest occurs, a bag filled one-third full of carbon-dioxide gas is placed over the face, and with artificial respiration this condition is remedied. If the patient is too highly narcotised, a towel placed over the face will prevent the escape of ether vapour and induce a certain amount of rebreathing, thus preventing the dilution of the anæsthetic with the outside air. If this is insufficient a few drops of chloroform or ether upon a towel will satisfactorily complete the narcosis."

Such is Gwathmey's technique; although simple, it subjects the patient to a deal of disturbance in regard to preparation and preliminary medication, while it calls for an extreme degree of watchfulness on the part of the anæsthetist in view of the cases reported in which deep and dangerous anæsthesia supervened with great rapidity.

My experience of the administration of oil ether began just two years ago while I was serving with the 83rd General Hospital in France. Major Gunn, R.A.M.C., proposed to remove an angioma from the tongue of a young soldier with a history of old standing pulmonary tubercle. He had had recurrent hæmorrhages, for which he had been treated at St. Bartholomew's Hospital two years before. Over six months prior to operation—in the autumn of 1917—he had joined the Army and was classed B2. When I saw him his tubercle appeared to be in a state of arrest. At Major Gunn's suggestion he received forty minutes before operation morphin gr. $\frac{1}{3}$ hypodermically. Ten minutes later ether three ounces in olive oil six ounces were injected through a long, rectal tube. The patient had hæmorrhoids, and an uncertain amount of the mixture was returned immediately. Half an hour afterwards he was carried on a stretcher to the theatre and placed on the table. He was very drowsy, but not anæsthetic. A few drops of CE_2 were administered on an open mask, and the patient appeared to be asleep, but he moved when the gag was inserted. A few drops more produced a fairly deep anæsthesia. The operation was completed in about twenty

minutes. During this time respiration was almost entirely by the mouth. The mask lay over the patient's nose, and a few drops of CE_2 applied to it maintained anæsthesia.

In this case we were working empirically. The ether percentage was too low, the volume of the injection too great. But I was much struck with the extreme ease with which anæsthesia was induced and maintained, and with its placid character. When the patient had been returned to bed the bowel was washed out, he awakened almost at once. I saw him again seven hours afterwards, he was still drowsy and his breath smelt strongly of ether.* Next morning he three times felt as if his bowels were about to move, but nothing passed. Recovery was uneventful. This, the first, was the only case in my series which showed any sign whatever of rectal irritation; probably the fact that he had hæmorrhoids accounted for the condition. Subsequent experience in France, working on this combined method, convinced me that it helped materially in maintaining a placid anæsthesia, gradually lightening to a working analgesia, in cases where the mouth or the neck was the site of operation. Unfortunately records of these cases are not to hand.

Since returning to civil work I have had further experience of this method. At first the dosage was rough and ready. Ether two ounces, in olive oil four ounces, for the spare or weakly; ether two and a half to three and a half ounces, in olive oil four ounces, for the more robust. Now, I prefer using a fifty per cent. solution, and I give one ounce of this for approximately every twenty pounds body weight of the patient—thus, a ten stone patient receives seven ounces. Probably I err in not giving a stronger mixture, but the control is greater, as the degree of anæsthesia produced by the ether absorption in the colon is never deep, and the danger of local irritation is materially lessened.

* This is of some importance, as Gwathmey states that the oil does not part with the ether in fifty per cent. solutions in a test-tube placed in a water-bath at body temperature. In all the cases noted in this paper the percentage was fifty per cent. or under.

The technique adopted is much more simple than that prescribed by Gwathmey. The bowel is washed out on the night preceding operation and again in the morning. Morphin, gr. $\frac{1}{6}$-$\frac{1}{4}$, preferably $\frac{1}{6}$, with atropin gr. $\frac{1}{150}$ - $\frac{1}{100}$ is given hypodermically an hour before the time appointed for operation. I have no experience of the use of chloretone. After the hypodermic has been given, the ordered quantity of 50 per cent. solution is passed slowly and continuously into the colon through a catheter passed as high as it will travel, the patient lying on his side. The catheter is slowly withdrawn, the bed is screened, the blind pulled down and the patient left at rest; the nurse in attendance keeping within easy reach, but preferably out of sight. Usually when the patient is approached at the end of an hour's time he will be found quietly sleeping or benevolently drunk. A few drops of oil of orange in spirit to mask the pungency of the ether vapour, followed by ether on the open mask, induces complete anæsthesia rapidly. The patient is then moved to the trolly and conveyed to the theatre. In practice I deepen the anæsthesia by continuing the oral administration during transit. Perhaps the method can be best illustrated by quoting a few recorded cases.

L. T., girl, aged 16.—Large parenchymatous goître. The rectum was thoroughly washed out the night before, and again on the morning of the operation. At 9.15 a.m. she was given morphin gr. $\frac{1}{6}$ with atropin gr. $\frac{1}{100}$ hypodermically. Ether three ounces in olive oil four ounces was given by a fine rectal tube passed as high as possible. the mixture being run in very slowly by the ward sister. Some minutes before 11 o'clock I found the patient on the trolley in the ward apparently asleep.

When I approached her she opened her eyes and moved her head, but when the mask was applied to her face she made no movement, and in a few minutes with very little ether she passed into anæsthesia. She was moved to the theatre, ether being administered on the mask during transit. At 11.4 the operation commenced and the mask was removed. At 11.8 she phonated. At 11.14 on traction

being put on the thyroid there were swallowing and slight retching movements; accordingly a few drops of ether were applied on the mask.

At 11.16 the mask was removed. At 11.30 there were swallowing movements, and ether was given for one minute. At 11.52—retching; ether applied for one minute. At 12.30—retching; a little frothy saliva extruded from the lips; ether applied for one minute.

The operation was concluded at 1.20, the patient removed to bed and the colon washed out. There was no sign of rectal irritation subsequently. During the course of the operation—two hours and sixteen minutes—ether was administered by the respiratory passages on four occasions; duration in all about five minutes. The type of anæsthesia all through was placid. Patient told me subsequently that she remembered me putting the mask to her face in the ward.

P. D., man aged 65.—Extensive malignant disease of floor of mouth and under surface of tongue. An hour before the time appointed for operation the patient was given ether three ounces in olive oil four ounces, or somewhat less, as there was a small amount of leakage during administration. He was then given a hypodermic injection of morphin gr. $\frac{1}{6}$ with atropin gr. $\frac{1}{150}$—for some reason the order was reversed in this case. When approached about an hour later he was very drowsy and placid. Ether with oil of orange in spirit was administered on an open mask, and he quickly became anæsthetic. He was moved on to the trolley and conveyed to the theatre. The operation—destroying the growth by means of the actual cautery—was begun, and completed in sixteen minutes without further administration of anæsthetic by the respiratory passages. A good working anæsthesia and analgesia was maintained throughout—that is to say, at the close of the operation he was contracting his occipito-frontalis muscle and phonating. On his return to the ward his bowel was irrigated. There was no sign of rectal irritation subsequently. This man was subsequently etherised by the rectal method on two occasions with similar results.

A. B., man aged 43.—Removal of half of tongue and

mass of glands from neck—malignant. A big, able-bodied man. Morphin gr. $\frac{1}{6}$ with atropin gr. $\frac{1}{150}$ was given hypodermically, followed by ether three and a half ounces in olive oil four ounces administered by rectal tube at 10.15. When approached at 12.20 patient was very drowsy. Administration by mask commenced at 12.21; by 12.27 he was anæsthetic. Though not violent he moved about in the bed before going under. He was moved to the trolley and reached the theatre at 12.30. The operation began at 12.39½, and the oral administration was stopped at 12.40. At 12.43 it was repeated until 12.47, again from 12.52 to 12.55, from 1.2 to 1.4, from 1.8 to 1.10, from 1.16½ to 1.18½, from 1.19½ to 1.25, from 1.34 to 1.37, from 1.45 to 1.47½, from 1.56 to 2.6, from 2.15 to 2.16, from 2.18 to 2.22, and from 2.23½ to 2.37, when the operation was finished. This last period covered the time while the mask lay over the patient's nose and the hand of the anæsthetist was occupied with the gag. During this period he received very little ether. Anæsthesia all through was very quiet and satisfactory. The mask was applied during the operation for fifty-three minutes, not applied for sixty-four minutes. The ether per rectum was given too long before operation, and in percentage not sufficient for a subject of the build and habit of the patient. Probably colonic absorption had ceased quite a long time before the conclusion of the operation. Nevertheless it was a very great aid in maintaining an even, satisfactory anæsthesia in a difficult and serious case. On his return to bed the colon was washed out. Recovery was without incident.

Mrs. A. W., aged 60.—An extremely emaciated, feeble woman with a large goître, both lobes being enlarged. "A growth" had been removed at another hospital some years ago, from the middle of her neck. She had been greatly troubled by cough and was going down the hill. Cough kept her awake. The growth was larger on the right side, and she was dull over the right sterno-clavicular articulation. About 11.15, when we were starting to operate on another case in the theatre, I sent word that Mrs. W. was to be given the mixture. She was given morphin gr.

$\frac{1}{4}$ with atropin gr. $\frac{1}{150}$ hypodermically followed by ether two ounces in olive oil three ounces *per rectum*. When I approached her at 12.10 she was somnolent. At 12.12 I began the oral administration. At 12.17 she was anæsthetic and was moved to the trolley. She was brought to the theatre. At 12.26 I removed the mask, but applied it almost at once as she seemed to be too lightly anæsthetised. The operation began at 12.32. At 12.36 I moved the mask. At 12.49 she moved her arm, so I gave her more ether until 12.51½ when I ceased. The operation concluded at 1.8. The removal of the right lobe of the thyroid, which extended into the superior mediastinum right down to the great vessels, was a very critical procedure. The anæsthesia was beautiful. The duration of operation was thirty-six minutes, during which she received ether by the respiratory route for six and a half minutes. From start to finish the time was fifty-six minutes, during which she received ether by the mask for twenty-six and a half minutes. She should have got the ether somewhat earlier, and I should have preferred morphin gr. $\frac{1}{6}$ to the gr. $\frac{1}{4}$ she received. The bowel was washed out as usual, and quite a large amount of the oil-ether was returned. Recovery was uneventful.

Mrs. F.—Large cystic goître.—About 9.15 patient was given hypodermically morphin gr. $\frac{1}{6}$ with atropin gr. $\frac{1}{150}$, ether three ounces in olive oil four ounces was then administered by rectal tube. The patient, an emotional lady, was noisy and restless after receiving the mixture—the nurse having to remain with her. When I saw her shortly after 11 o'clock she was noisily drunk. At 11.11 I began the administration on the open mask. At 11.16 she was asleep. She was on the table in the theatre at 11.19. Operation commenced at 11.26, two minutes later I removed the mask. At 11.37 there was some traction on the trachea on which the patient made some straining movements—so I applied the mask for two minutes—11.39. At 11.48 she again strained, so the mask was applied for one and a half minutes—11.49½. At 12.1 the operation was completed. The patient was removed to the ward, the rectum washed out. Recovery was without incident. The type of anæsthesia was good throughout; the duration of operation

was thirty-five minutes; during its course ether was twice given by the respiratory tract—in all, five and a half minutes. This was the only case in which the patient was noisy during the pre-anæsthetic period.

These cases may be taken as typical of the method and of the results obtained in the series, which includes the following :—

Malignant disease of tongue	7
Excision of jaw and tongue—malignant disease	1
Malignant disease of the floor of the mouth ...	3
Malignant disease of palate	4
Chronic abscess of thyroid isthmus	1
Goitre (various)	4
Malignant glands in neck, secondary to epithelioma of the lip	1
Epithelioma of lip and plastic formation of lip ...	1
Angioma of tongue	1
Tumour of cervical sympathetic	1

The age of the youngest case in the series was eight years, and of the oldest, sixty-five years.

The duration of operative procedure varied from sixteen minutes to three hours.

Two cases in the series gave some anxiety. One man, aged sixty, who had three and a half ounces of ether in four ounces of olive oil administered after the usual hypodermic had been given, and in whom anæsthesia was induced in the usual way, was extremely pallid on arriving at the theatre, and his respiration became very shallow, while his pulse remained good. Respiration deepened, however, in a few minutes and his general aspect improved. The operation—ligation of the lingual artery and hemisection of the tongue to the epiglottis—was then proceeded with, and was completed without incident in forty minutes. The longest period during which it was possible to discontinue the oral administration was six minutes. In this case it is probable that the patient was moved to the trolly before he was sufficiently deeply anæsthetised.

The other case was that of a man, aged sixty, extremely emaciated, a dweller in a Dublin tenement, affected with extensive malignant disease of the tongue with a huge mass of glands in the neck. Ether six ounces of fifty per cent. solution in olive oil was administered shortly before patient was brought down for operation. Anæsthesia was induced by the administration of open ether. The dissection of the neck was very extensive, the carotid sheath being exposed for its whole extent. The internal jugular was removed with the growth and the vagus lay exposed. There was a considerable amount of hæmorrhage from the common facial vein which was divided. The growth was adherent to the larynx, and could not be completely removed. The surface of the cut growth was cauterised with the Pacquelin cautery. During the course of this procedure the patient suddenly stopped breathing in extreme inspiration; anæsthesia was not deep at the time. The head was lowered and an effort was made to perform artificial respiration, but the chest remained fixed. Tongue traction was tried, but the tongue was fixed by the growth. When things looked desperate, the patient relaxed, and, after a very short spell of artificial respiration, breathed normally, and the operation was completed without further incident. While the patient was not breathing and subsequently the colon was washed out. The duration of the operation was about three hours. The patient came round from the anæsthetic and had no rectal symptoms. About forty-eight hours afterwards he began to have respiratory difficulty, and died next morning.

In this case I do not think that the anæsthetic had anything to do with the trouble. The patient was not deeply anæsthetic when respiratory arrest occurred. I incline to the belief that the cause lay in stimulation of the nervous mechanism of respiration.

The advantages of this method may be summarised as follows:—

1. The relatively small amount of ether administered by the respiratory tract.
2. The ease with which a continuous satisfactory

Down growth of epithelius, with cell infiltration of papillæ.

Dark mass is a tubercle. Darkest spot in middle is a giant cell, badly shown in photograph

anæsthesia lightening to a working analgesia—for example, in serious mouth cases—is maintained.

3. The type of anæsthesia, which is placid and characterised by an absence of mucous secretion.
4. The absence of after-sickness.
5. The continuance of analgesia after anæsthesia.
6. The absence of intrusion by the anæsthetist on the field of operation.
7. The lessening of the psychic factor in regard to shock. This is pre-eminent in cases of goître. The patient gets the injection while in bed without knowledge of its nature.

Its field of usefulness lies chiefly in operations on the head and neck—especially when the element of fear is in evidence.

It is contraindicated in colitis and in cases having a pathological condition of the lower bowel. Hæmorrhoids do not necessarily preclude its use, but care should be taken in giving the injection, and in the lavage after operation.

In spite of Gwathmey's teaching I do not think that oil ether colonic anæsthesia is suitable in chest cases if there is collapse of the lung or intrapleural pressure. The ether is absorbed in the colon and some of it is execreted in its passage through the lungs before reaching the centres. If the area of lung surface is reduced by collapse or by pressure it would seem that there would be an increased danger of overdosage. Accordingly, if the method is used in such cases the percentage of ether should be low.

A NOTE ON LUPUS TUMIDUS.

By BETHEL SOLOMONS, M.D., F.R.C.P.I.;
Gynæcologist to Mercer's Hospital, Dublin.

In a search of the literature on this subject I have been confronted with a difficulty with regard to nomenclature. In an able article in Eden and Lockyer's "System of

Gynæcology," Clifford Whyte has divided tuberculosis of the vulva into ulcerated and non-ulcerated types. Other authors classify the condition as tuberculous ulceration and lupus, and divide the latter into three forms—namely, superficial, deep and hypertrophic. Dorland defines lupus hypertrophicus as a kind of lupus marked by the formation of vegetations, and as lupus tumidus is defined as a form marked by subcutaneous infiltration and doughy swelling, the case which is presented this evening may be said to come under this heading.

Tuberculosis of the vulva is unusual in any form, and in the form under review it is extremely rare. One quarter of all the cases of tuberculosis of the vulva are said to occur in children, and the most usual age in adults is between 30 and 40. It is found most commonly after pregnancy, when the skin and mucous surfaces are in a bruised condition. It is seen very occasionally as a primary infection. When secondary it is due to phthisis in most cases. When secondary to lesions higher up, the causal factors are tuberculous urine and discharges from infected uteri and tubes.

Mrs. X. was referred to me by Dr. James Ashe, and was admitted to Mercer's Hospital. She was 36 years old, had been married 13 years, and had one baby 8 years previously. The labour was normal, but she had a stormy puerperium. When the child was three months old she noticed a swelling in the vulva, which increased in size for two or three months, and since then had remained stationary. She had consulted many doctors and had been treated with all varieties of lotions, ointments, baths and other useless remedies, until she sought the advice of Dr. Ashe, who kindly asked me to undertake the case. The growth, although stationary for some time, occasioned her much distress from its weight and from itchiness, and also caused dyspareunia and difficulty in walking.

The patient's mother died of phthisis. The general history was good. Examination of the chest, abdomen and pelvis was negative for disease. The blood and urine were normal.

Masses with cell infiltration and clearer centres are tubercles.

Low power shows mass of granulation tissue with tubercles dotted through it

The appearance of the vulva was typical of a marked œdema, but no pitting could be elicited, and the parts were harder than œdema. The clitoris, labia majora and minora were involved in their whole extent, and at the inferior junction of the labia there was slight ulceration from attrition. The inguinal glands were not involved. No definite diagnosis was made, and a piece was removed for microscopic examination. Professor O'Sullivan kindly examined it, and reported "that the tissue is mainly dense fibrous tissue; there are numerous spaces under the epithelium filled with a serous fluid, and similar fluid lies in the vascular tissues deeper down. There are collections of small round cells, some close to the epithelium, others deeper down. The horny layer of epithelium is distinct, and is in some places separated from the underlying layers. The down growths of epithelium between the papillæ are hypertrophied." This report tallied with the usual description of tuberculosis, and although no tubercles were discovered I decided to remove the vulva. The operation was easy, and on section of the specimen, which was once more examined in the Dublin University Laboratory, the following report was given:—"Tubercles are present. Most of the enlarged mass is hard fibrous tissue with small round cell infiltration in patches, but the condition is undoubtedly tuberculosis." The micro-photographs, which Dr. Wigham has made for me, demonstrate these points.

The differential diagnosis lay between phlegmonous vulvitis, simple hypertrophy of the vulva, leukoplakia, elephantiasis, or some form of syphilitic hypertrophy.

The removal of a piece of tissue for microscopic examination was the safest and quickest method of diagnosis. It was considered that as the patient had had various treatments extending over eight years that such methods of diagnosis as test inoculations and such methods of treatment as tuberculin were not advisable; in other words, the diagnosis having been made, extirpation was the only sound treatment, and the patient left the hospital in perfect health. The fact of the disease being essentially local makes the prognosis good.

Finally, the nomenclature of tuberculosis of the vulva, like that of many other conditions in gynæcology, is unsatisfactory, and I would suggest "lupus tumidus" as a suitable name for this phenomenon.

THE EARLY SYMPTOMS OF CANCER OF THE COLON.

By SETON PRINGLE.

Surgeons are nowadays agreed that the prognosis following operation for *early* cancer of the colon is more favourable than that for almost any other part of the body. This opinion is based not only on practical results, but on the pathology of the condition. The growth remains local in the wall of the gut for a long period; it is rarely disseminated by the blood stream, and the arrangement of the lymphatic vessels and glands is such as lends itself to a true radical, or *en bloc*, operation—an operation in which the primary growth, the lymphatic glands and the lymphatic vessels connecting the two, are removed all in one piece.

I have recently been endeavouring to trace those patients on whom I carried out such an operation some years ago. I was frankly disappointed with the result of my investigations. I found that about 40 per cent. had recurrence within periods of less than two years, while only 30 per cent. survived more than five years. Such results, certainly, do not sound encouraging at first sight, but, on analysis of the series of cases, the reason for this high rate of recurrence is obvious. Excluding altogether those cases in which the radical operation was not attempted on account of widespread disease or extreme cachexia, I found that 33 per cent. of the resections were preceded by colotomy for marked intestinal obstruction associated with distension and vomiting; in 7 per cent. perforation followed by abscess formation had occurred, while in 22 per cent., other organs such as the uterus, bladder and small intes-

tine were involved, and very extensive operations had to be carried out, so that only 37 per cent. of the cases were uncomplicated, or what might be called early cases.

Figures such as the foregoing force the operating surgeon to ask the question—Cannot more of these cases be recognised at an early stage and so be referred to the surgeon at a time when the operation holds out a good hope of a permanent cure? Surely there must be something wrong with our methods of diagnosis if such a gross lesion as a malignant growth of the bowel cannot be recognised in almost all cases before obstruction is marked or the disease has spread to other organs. It is my belief that most cases of cancer of the colon can be diagnosed long before the classical signs and symptoms of the disease develop, and, even if a definite diagnosis cannot be made, the presence of a cancerous growth can be suspected so strongly as to justify a timely exploratory operation. It is with the object of emphasising the importance of an early diagnosis, and especially of some of the early symptoms, that I venture to make this short communication.

The development of cancer in the bowel is necessarily accompanied by tumour formation. In a spare individual, unless the growth lies in the pelvic colon or in a non-ptosed splenic or hepatic flexure, it can be palpated long before any serious narrowing of the bowel has taken place. Indeed, I have several times discovered such a growth during a routine examination of a patient's abdomen before any symptoms referable to it were produced, one such case coming to me for an operation for inguinal hernia, and another with uterine hæmorrhage due to myomata. The records of the uncomplicated cases in my series show that the growth in no less than 70 per cent. occurred in parts of the colon which were easily palpable, and that the diagnosis was based on the discovery of a tumour. Again, in those cases in which obstruction was present, the growth in more than 80 per cent. was situated in the pelvic colon, or in what might be called the "silent" area of the bowel, since a growth there is frequently not palpable either by abdominal or rectal examination. The

obvious conclusion to draw from these two sets of figures is that where the growth is situated in a palpable part of the colon the diagnosis is generally made at an early stage, but when no tumour can be discovered the medical attendant is inclined to wait for developments.

Unfortunately, more than half the cases of cancer of the colon occur in the pelvic segment, and generally the growth in such cases is not palpable. The same observation applies to cancer occurring in a highly fixed splenic flexure, and, to a lesser extent, to those in the hepatic flexure—a growth in the latter situation can, as a rule, be palpated on deep inspiration. The number of cases, however, occurring at either flexure is small compared to those in the pelvic colon, so that it is to the early diagnosis of cancer of this part of the bowel that I wish to draw attention, and any remarks I have to make will apply with equal force to cancer of the recto-sigmoid.

I believe that the logical manner in which to approach the diagnosis of any disease is to study its pathology and symptoms and to corelate the two. Following such a method, we find that the essential pathology of cancer of the colon might be epitomised into four stages—tumour, ulceration, stenosis and dissemination. I think we might with advantage study the clinical manifestations of the condition under these heads.

We have seen that in most cases where the pelvic colon is affected the tumour cannot be palpated, and it is only in the later stages that the growth assumes such a size that the patient experiences a sensation of there being "something there," so that, as a rule, the patient's first complaint is due to the onset of ulceration. This soon follows the appearance of the cancer and is manifested by the passage of blood, mucus and pus in the stools. In these early cases these abnormal constituents of the stools are small in amount (the pus particularly may be overlooked at a cursory examination, and may require a microscope for its detection); they are passed only as part of, and not independent of, a faecal motion; they are constantly and persistently present although the quantity may

vary from day to day, and their presence is not associated with any pain. Their appearance in the stools is positive evidence of ulceration, and the causes of ulceration are so few that their persistent passage in the manner just described is most strongly indicative of malignancy, and, to my mind, justifies an exploratory operation, whether the two special means of examination presently to be mentioned are positive or not.

The onset of the third pathological stage—that of stenosis—is evidenced clinically by several signs and symptoms on which I consider sufficient stress has not been laid. A patient whose bowels have previously been regular finds that instead of one good motion per day he passes two or three small ones, and similarly, a patient who has formerly had recourse to regular aperients finds that a similar dose instead of giving one or two fairly large motions now produce from four to six smaller ones. Associated with this disturbance of function there is also frequently a feeling of dissatisfaction as if the bowels were not properly emptied. I have found if a patient has not noticed the passage of blood and mucous, and his attention is first called to there being something wrong by the onset of this frequency of defecation and sensation of dissatisfaction, that where such symptoms are complained of an examination of the faeces will, in cancer of the colon, always disclose the presence of these products of ulceration in the motions. The syndrome comprised of the passage of blood, mucus and pus with an increase in the number of daily evacuations, together with this feeling of dissatisfaction, is characteristic of early stricture of the bowel associated with ulceration, and the only common cause of this condition is cancer. As the early symptoms of cancer of the colon are the only ones under consideration in the present communication, the further development of the ulceration and stenosis with their clinical manifestations need not be dealt with, except that I would like to sound a note of warning against the diagnosis of "impaction of faeces." In my experience this condition *per se* is extremely rare compared with cancer. The great majority

of cases so diagnosed and temporarily relieved by enemata return sooner or later with marked obstruction necessitating colotomy, and the discovery then of a malignant stricture.

I have in passing, mentioned two special methods of examining the lower bowel; when they were introduced surgeons hoped that, at last, an infallible means of diagnosis had been discovered, but the results have not justified our high hopes; I refer to the examination of the pelvic colon and rectum by the fluorescent screen after barium meals and enemata, and to the use of the sigmoidoscope. With reference to the former I have come to the conclusion that in early cases no reliance can be placed on the appearance seen after an opaque meal, and that but little information in such cases is to be obtained from a barium enema—to obtain any at all I believe the surgeon should be present at the examination and see for himself the opaque fluid running into the bowel. This method depends for its results on the obstruction having advanced to a considerable degree, but still not far enough to preclude the bowel above the stricture being completely emptied by preliminary purgatives and rectal injections. In my opinion a negative finding does not necessarily exclude a stricture, nor a positive infallibly prove one. By these remarks I do not mean to convey that the aid of the rontgenologist should not be called in, for undoubtedly a narrowing shown as constantly present in the column of the opaque material after a barium meal, and demonstrated in the same position by an opaque enema, is strong corroborative evidence of a growth already suspected from the symptoms, and such an *x*-ray finding immensely strengthens the surgeon's demand for an exploratory operation. The point I wish to make is that a negative result of such an examination should not rule out an exploratory operation in a case where the surgeon strongly suspects from a study of the signs and symptoms that a growth is present. As regards the second aid to diagnosis—the sigmoidoscope—here we have an instrument which occasionally yields absolutely positive proof of the presence of a growth. Unfortunately, in many cases

I have found it impossible to pass this instrument round the angle between the rectum and the pelvic colon and so gain precise knowledge of the state of affairs in the pelvic colon, but all growths in the recto-sigmoid and a proportion of those in the pelvic colon proper can be demonstrated. Its use does not necessitate an anæsthetic; it does not cause pain; is free of risk in careful hands, and frequently clinches the diagnosis, so that no examination can be considered complete without it.

In conclusion I would like to give the notes of a recent case to bring out the points in diagnosis on which I wish to lay stress. A gentleman, aged 73, in excellent general condition, exceedingly young-looking for his age, came to me with the following story :—He had been accustomed for years to take a small dose of salts before breakfast, and for the past two months had noticed that instead of one good motion as a result he had from two to four small ones, and even then his bowel would not feel empty. The motion was frequently accompanied by a little blood and slimy material. Examination of the abdomen and rectum both digital and with the sigmoidoscope revealed nothing abnormal. A barium meal, and subsequently barium enemata were given, and no definite stricture was discovered. I told him that in spite of the negative examination I was convinced that he had cancer of the pelvic colon, and advised an exploratory operation. This was refused, but two months later, on the persistence of the symptoms, he returned, and the growth was discovered and successfully resected.

I would urge that cancer of the colon should be treated on the same lines as we treat acute appendicitis. Not so many years ago cases of this disease were carefully watched for the onset of so-called "indications for operation," whereas, nowadays, the only indication the surgeon requires is evidence of acute inflammation in the right iliac fossa. Similarly, I believe the persistence, without discoverable cause, of the symptoms just enumerated are sufficiently suspicious of cancer of the colon to justify an exploratory operation; very rarely, in my experience, has such an exploration resulted in a negative finding.

OVARIAN INSUFFICIENCY AS A PROBABLE CAUSE OF EPILEPSY.[a]

By J. S. ASHE,

As we are all aware, in the ovary three different tissues are distinguished—(1) the Graffian follicles, (2) the corpus luteum, (3) the interstitial tissue. The first is the most considerable tissue element of the ovary, and, in addition to its function of producing the ovum, is regarded as giving rise to an internal secretion to which the activity of the ovary as a whole is due. Fränkel attached considerable importance to the corpus luteum, which he regarded as a gland undergoing periodic regeneration, and responsible for the nutrition of the uterus. This theory is no longer accepted; further investigations indicate that the persistent corpus luteum may be concerned with inhibition of ovarian activity and especially with the prevention of ovulation during pregnancy. The interstitial tissue is regarded as secreting a hormone which is of importance during pregnancy, and is probably connected with the cycle of changes associated with ovarian activity. Now, it is interesting to remark that such modern writers as Dupuy and Starkey, with modern methods of investigation, have made it possible to associate definite symptoms with deficiency of secretion of endocrine glands, and there are many indications of close inter-relationship between the various members of the endocrinous system, so that we can regard diseases of the ductless glands as usually plural rather than isolated and single. The condition of multiple functional deficiency of the endocrine organs has thus come to be recognised and attributed to changes in the hormone balance, upon which normal metabolism depends. The administration of gland substances is regarded

[a] Read before the Section of Obstetrics of the Royal Academy of Medicine in Ireland, November 28, 1919.

as not only replacing in part the deficient secretion, but also as stimulating the particular organs to greater activity for a longer or shorter time. So that treatment by pluriglandular extracts favours general secretory activity, and in certain classes of cases very good results have been obtained. Many cases of what is apparently glandular deficiency benefit considerably by pluriglandular treatment; in conditions of low vitality not associated with organic disease the stimulant effect of mixed hormone treatment is most noticeable.

With these few introductory remarks I will state briefly three cases which form the basis of this paper.

Case 1.—Mrs. C., married, aged 32, had a ruptured tubal pregnancy on the right side; two years after this she had a ruptured tubal pregnancy on the left side; menstruation continued for twelve months after the last operation, and then stopped altogether. She came to me suffering from hystero-epilepsy, bad depression and the usual symptoms of artificial menopause. Her weight had increased from about 8st. 3 lbs. to 11st. 6 lbs. in about twelve months; her life was a misery to herself and her husband, whose purse had suffered much at the hands of many physicians. As none of the usual ovarian tabloids did her any good, I obtained from Messrs. Allen and Hanbury a fresh fluid extract of ovarian tissue, a grain to 1 m—20 m. in each. I inject one of these every second week. Since the injections began her bloated appearance has gone, all the artificial menopause symptoms have gone, and, most remarkable of all, the periods have come back for one day at a time, and the hystero-epileptic symptoms have completely gone.

Case 2.—Miss De V. had had mumps in March last: she complained of dysmenorrhea and inward pains since then. I examined her per rectum, and found both ovaries enlarged and tender. I said she would be all right in a short time, and advised stoppage of all work, &c. She then had a bad epileptic seizure, bit her tongue, &c., which she never had until she had the mumps. Dr. Bewley saw her with me in consultation after five well-marked

attacks, and knowing the peculiar complications of orchitis which occurs in males, as a complication of mumps, I thought it quite possible the ovaries were affected in the same way, and that this was indirectly the cause of the epilepsy. I started to give her ovarian ferment extract, and she has not had an attack since beginning this treatment.

Case 3 was a girl afflicted with epilepsy, making life a trouble to herself and to every one else. I gave her 20 ♏ of ovarian fluid extract for a while, but except that there may have been a slight lengthening in the time between attacks I cannot say there was an appreciable result. I then tried polyglandin, for the reasons stated in my opening remarks, and the results have been satisfactory in three respects :—(1) The length of time between attacks has greatly increased; (2) they are always at night now; (3) she can tell when they are coming on.

The deduction I have tried to evolve is that the toxin which acts as the predisposing factor in some cases of epilepsy is produced by (*a*) absence, diminution or change in the ovarian ferments leading to (*b*) some multiple functional deficiency of the endocrine organs which upsets the hormone balance, producing further toxins which act on the cerebral cortex, causing epilepsy in some cases. This theory may appear far-fetched, but if we accept Osler's definition of "epilepsy" as "an affection of the nervous system characterized by attacks of unconsciousness with or without convulsions," I think those of us who have had experience in gynæcology cannot deny the association between ovarian insufficiency and epilepsy.

REVIEWS.

Post-mortem Manual. A Handbook of Morbid Anatomy and Post-mortem Technique. By C. R. Box, M.D., B.S., B.Sc. Lond.; F.R.C.P. Lond.; F.R.C.S. Eng. Second Edition, with 22 illustrations. London: J. & A. Churchill. 1919. Pp. x + 372.

Since the appearance of the first edition of this work in 1910 several additions have been made. A short chapter on the methods of obtaining material for bacteriological examination has been introduced. New illustrations of dissections of the brain have been added, and also a useful *résumé* of the chief points to be attended to in investigating cases of sudden death. Misprints are few, but on page 15 "bronchiolititis" occurs instead of "bronchiolitis." The portable size of the work and the concise information which it supplies should commend it to both students and practitioners.

The Nature of Enzyme Action. By W. M. Bayliss, D.Sc., F.R.S.; Professor of General Physiology, University College, London. Fourth Edition. London: Longmans, Green & Co. 1919. Pp. 190.

Dr. Bayliss is admitted on all hands to be one of the foremost exponents of physiology in the present generation. He has an accurate and extensive knowledge of physics and chemistry, and is master of a clear and attractive style. His work on "General Physiology" is unique, and shows a surprising grasp of fundamentals, coupled with exact development of details, and it is a truly indispensable book, although too advanced for the ordinary student.

It is just ninety years ago since Dubrunfant prepared an extract of malt which converted starch into sugar, and three years later the active substance was isolated by Payen and Persoz, and named "diastase," the first known member of the group of "ferments" or "enzymes."

Once the door was opened a steady stream of investigation flowed in, and this has increased in volume up to the flood tide of the last few years.

For the present, enzymes may be defined as the catalysts produced by living organisms. A "catalyst" is an agent which alters the rate of chemical reaction, and yet does not itself appear in the final product of the reaction.

It is needless to give a detailed analysis of the book under review, and a fourth edition within a few years testifies to the welcome it has received. The book can be heartily recommended to all who wish to gain a clear insight into the properties and mode of action of one of the most significant factors in biological processes.

The Great War and the R.A.M.C. By Bt. Lieut.-Col. F. S. Brereton, R.A.M.C. With 9 Maps, 1 Plan and 2 Appendices. London: Constable & Co., Ltd. 1919.

In compiling this first volume of the "Popular Medical History of the War," Colonel Brereton has had at his disposal official documents and diaries, so that his account may be regarded as strictly accurate. He has succeeded in producing a book which will be full of interest to the entire community, and which will specially appeal to those members of the R.A.M.C., both officers and men, who took part in the events which he narrates.

He begins his tale with the first orders to mobilise in August, 1914, and continues it to the time when trench warfare began on the Aisne. In addition to giving a carefully detailed account of the services performed by the Army Medical Service as a body during those trying weeks,

he enlivens his narrative with many tales of individual heroism, and also with numerous comments on organisation and on the difficulties encountered. The main fault which he finds with the organisation at the outbreak of hostilities was the absence of motor ambulances. The need for these had been long foreseen, but for various reasons the views of Sir Alfred Keogh had not been accepted, and in consequence we entered the conflict supplied only with horse-drawn vehicles. The retreat from Mons made the demand for motors imperative, and shortly after the retreat a supply of these became available, but meanwhile many a man had suffered defeat or captivity owing to the impossibility of rapid evacuation of the wounded. It is poor consolation to read that the German Army was similarly deficient.

In contrasting the work done by British and German medical officers, the author of the history agrees with all other observers that in humanity towards the wounded our men were infinitely superior. One has only to read the appendix on the Wittenberg Camp incidents to appreciate to the full how widely the British and German ideals differ.

A Manual of Midwifery. By Thomas Watt-Eden, M.D., C.M. Edin.; F.R.C.P. Lond.; F.R.C.S. Eng.; Major R.A.M.C. Fifth Edition. London: J. & A. Churchill. 1919. Large 8vo. Pp. viii + 747.

The new and fifth edition of Eden's Midwifery making its appearance within the comparatively short period of thirteen years is evidence of the popularity of the book. The new volume does not present any feature which is very different from its predecessors, except in the chapters dealing with the management of labour and the management of the infant. The chapter on the management of labour gives very concisely and clearly all the essential

facts for dealing with a case of normal labour. The author mentions on page 302 two uterine stimulants, ergot and pituitary extract, but he does not sufficiently emphasise in a text-book for students the dangers that attach to the indiscriminate use of pituitary extract before full dilatation of the os.

In the treatment of eclampsia a distinct advance is reached in this edition, by the insistence on the absence of all food both before and during the convulsions.

The statement made on page 509 that chloroform is a dangerous anæsthetic in eclampsia is one that cannot be too widely disseminated. There is very little doubt that the administration of chloroform as a means of controlling the fits has been responsible for a certain number of deaths.

As a text-book for students the matter is admirably presented, the figures are clear and explanatory, and the edition is one that can be confidently recommended to both students and practitioners.

The book is a notable addition to English obstetrics, and a credit to the London School of Midwifery.

Experimental Pharmacology. By Hugh McGuigan. New York: McD. Lea & Febiger. 1919.

This book purports to present experimental pharmacology in a brief, concise form, yet to give the student an adequate view of the field.

How any hard-pressed student, or class of students, could be expected to go through even half the amount of experimental work described, in the time allotted, seems to the writer to be impossible.

It is evident from the hundreds of experiments upon animals that American teachers of pharmacology are not hampered by strict vivisection laws such as exist in the United Kingdom.

The wide scope of the course is indicated by the headings

of the principal chapters—viz. : Local action of drugs, pharmacology of the gastro-intestinal tract, antiseptics and disinfectants, drugs acting upon the cerebrum, the cranial nerves, heart and blood pressure, action of certain drugs on the central nervous system, motor nerve endings, and sensory nerves, autonomic system, the eye, antagonism, anti-pyretics, the digestive glands, kidneys, sweat glands, liver, mammary glands, uterus and bladder, lymphatics, general protoplasm poisons, the blood. Surely a long bill of fare.

Many of the experiments involve a space of time longer than that usually allowed for a class.

The book appears to us to be more suitable for a professor of pharmacology than for a students' text-book, and, from that point, it is certainly most suggestive and instructive.

There is little or no reference to clinical therapeutics, and this modern plan of divorce of pharmacological work from its clinical relations is, in our opinion, unsatisfactory.

Ideals in Radiology and Electrology. By A. E. Barclay, M.D.

Dr. Barclay in this, his Presidential Address to the Electro-therapeutic Section of the Royal Society of Medicine, gives a brief survey of the present position of electrologists.

Dr. Barclay, we think, has earned the gratitude of the profession in general, and the radiologist in particular, by his candid and outspoken criticisms.

First, he emphasises the necessity for special training in this department of medicine—a necessity now recognised by the University of Cambridge, which grants a special curriculum of systematic lectures and demonstrations and a diploma in this branch. There is no doubt that such courses will be widely appreciated, and the result of such teaching will very quickly make itself felt.

After some preliminary remarks on the subject of apparatus, Dr. Barclay turns his attention to hospital work. Here the keynote of his theme is closer co-operation between the radiologist and his colleagues. His advice is excellent, and should be read not merely by the radiologist, but by all those also who hope to derive benefit from sending their patients to the *x*-ray department. A few useful words follow on the use of the *x*-ray department—an abuse which we fear is increasing, and which requires co-operation for its suppression.

On the subject of the status of the radiologist and electro-therapeutist. Dr. Barclay's well-balanced remarks should command general attention. The matter is dealt with impartially, and the specialist and his colleagues alike receive wholesome advice and instruction.

We welcome this address delivered at a most opportune moment. It contains seed of much progress. We trust it may not fall on barren ground.

W. G. H.

An Introduction to General Physiology with Practical Exercises. By W. M. Bayliss, M.A., D.Sc., F.R.S.; Professor of General Physiology in University College, London. London: Longmans, Green & Co. 1919. 8vo. Pp. 238.

The title of this book might lead one to suppose that it was an elementary text-book, but in reality it is a book that will appeal more to the advanced student and to the teacher than to the beginner. The book is, as it professes to be, a presentation of the principles and conceptions which are the foundation of our knowledge of physiological function, and these are treated in a particularly lucid and suggestive fashion. The chapter on "Life and Energy" is an extremely lucid and comprehensible application of the theory of energetics to vital processes.

We were surprised that the old "carbamide" structural formula is given for urea (page 50). This formula is completely disproved by the work of E. A. Werner, and should no longer be retained, as it serves to mislead biochemists as to the real nature of the reactions involving urea.

Is it not time that *pressure of a gas in solution* be substituted for the phrase *tension of a gas* (as used on page 85), especially in a book which is so accurate as regards nomenclature? It would be more accurate to speak of *osmotic tension* than *gas tension*, if the word must be used.

The explanation of enzyme action as due to surface adsorption is rather inadequate. Reference might with advantage be made to the other probable modes of action, notably the formation of intermediate products and the work of J. Van Slyke and his assistants.

The list of sources of supplies is an excellent innovation. The Cooper Laboratory for Economic Research, Watford, Herts, might be included as supplying standardised solutions and indicators for colorimetric work.

The book is one that every physiologist and biologist should read.

A Text-book of Physiology. By WILLIAM H. HOWELL, Ph.D., M.D.; Professor of Physiology in the Johns Hopkins University, Baltimore. Seventh edition, thoroughly revised. 8vo. of 1,359 pages, fully illustrated. Philadelphia and London: W. B. Saunders Company. 1918. Cloth 25s. net.

HOWELL'S PHYSIOLOGY is so widely read and appreciated by both students and practitioners in this country that it is only necessary to say that this edition well maintains the standard of former editions. It has been revised and much new work has been incorporated, and many new papers referred to. As an up-to-date presentation of the

problems of physiology, there is no better text-book. The treatment of the various subjects is wide and comprehensive, and the numerous applications of recent physiological work to clinical problems should be an attractive feature from the practitioner's point of view. The bibliography is conveniently given as foot-notes to the pages on which the subject is discussed instead of being collected as an index. The references to recent papers are comprehensive, but much of the work of the earlier investigators is not referred to; in fact the historical side of the subject receives in many instances very scant attention. The book is well indexed. The type and illustrations, which are numerous, are good.

Milk. By Paul G. Heineman, Ph.D. Philadelphia and London: W. B. Saunders Company. 1919. Large 8vo. Pp. 684.

Dr. Heineman has, with the help of specialists, treated milk from every point of view, and has compiled an excellent handbook, clear, exhaustive, well-arranged and up-to-date. It will be found worth consulting by medical men who are naturally interested in milk as the food of the infant and the invalid.

Among interesting chapters are those on the germicidal action of fresh cow's milk, the transmission of toxins and anti-bodies, and enzymes. Physical examination and chemical examination get careful treatment, and there is a useful chapter on adulteration.

In the chapter on transmission of toxins the author writes:—

"Most of the studies on transmission of anti-bodies through milk have been carried on with anti-toxins. However, some evidence is at hand which seems to indicate that other immune bodies may be transmitted through milk directly to the suckling. Transmission of agglutinins, bactericidal substances, hemolysins and opsonins (Wood-

head and Mitchell) have been observed, and even hypersensitiveness seems to be transmissible through milk."

With regard to fermented milk the author thinks that in the present state of our knowledge it is premature to draw sweeping conclusions for or against the therapeutic effect of Bulgarian bacilli, as it has been shown that a milk diet, and even consumption of pure milk-sugar, changed the intestinal flora, so that lacto-bacilli became numerous.

The author notes that 25 selected cows give the same profit as 1,021 poor cows, each good cow producing 301 pounds of butter fat per year, the poor cows averaging 133½ pounds. The feeding of each good cow costs a shade more than double the cost of a poor cow. The saving of labour in caring 25 cows instead of over 1,000 is great. Good stock will soon repay their initial cost.

The Cambridge Note-Book for Practical Biology (Zoology), Sixth Edition. Edited by J. Stanley Gardiner, M.A., F.R.S., and L. A. Borradaile, M.A. London : Henry Frowde and Hodder & Stoughton. 1919. Sm. 4to. Pp. 76.

Following a short introduction in which general directions for work are given, come a number of pages intended for the student to make drawings of structure and structures. At the head of each page a few lines point out what is to be seen, and the necessary technique.

Thirteen animal types and parts of types are included, the number of pages devoted to each depending upon the number of drawings the student is expected to make.

ABSTRACTS OF CURRENT LITERATURE.

ANÆSTHETICS.

BUETTNER, J. J., *Team Work of Operator and Anæsthetist*. "American Journal of Obstetrics." December, 1919.

THE object of a trained surgical team is not alone to prevent death but to overcome and minimise the discomforts attending surgical operations. This manner of work has brought about specialisation in anæsthesia. The anæsthetist must be specially trained; heretofore the policy of medical colleges has been short-sighted in not sufficiently training the medical student in this branch. The anæsthetist should not merely administer the anæsthetic. His help weighs in the balance the advisability of operating and the selection of the safest time to operate, and it is he who makes the choice of the anæsthetic. He helps to prepare the patient for operation. To do all this the anæsthetist must be a trained physician. A quantitative and a qualitative examination of the urine should be made, and the examination for acetone should be a routine practice before operation, and the blood-clotting time should be ascertained. The estimate of blood pressure is too often neglected. Giving the patient the usual diet the day before operation, supplemented, as suggested by Flagg, with one half-pound of chocolate or some other form of glucose, will help to neutralise the acidosis produced by the anæsthetic. Purging or active catharsis is not only useless, but is one of the great causes of post-operative gas pains and distention of the bowels. Emergency cases, where preparation is impossible, seldom suffer from gas pains. Preliminary medication may be employed sublingually rather than hypodermically. If blood-pressure observations are taken during the operation one will find evidence of danger long before it manifests itself, and proper measures may be taken to meet it. Water should be given as soon as consciousness is fully established. The rectal injection of alkaline solutions, with or without glucose, should be ordered if the case demands them.

ALFRED E. BOYD.

NORBURY, L. E. C.: *Cardiac Massage as a Means of Resuscitation.* "The Lancet." October 4, 1919.

NORBURY discusses the subject of cardiac massage as a means of resuscitation in cases of apparent sudden death, especially when the result of an overdose of an anæsthetic. The subdiaphragmatic route of approach is advocated. The hand is inserted between the left lobe of the liver and the diaphragm. The heart is defined and pressed against the thoracic wall, external counter-pressure being maintained with the other hand against the ribs on the left side, or else the heart may be kneaded through the diaphragm by the closed fist. The opening in the abdominal wall should be large enough to admit the hand comfortably. In children it is sometimes possible to perform cardiac massage by manipulation below the costal margin without any preliminary incision.

The author has had occasion to employ the method on fourteen to sixteen occasions with successful results in three, not including several cases of temporary stoppage of the heart in which the abdominal cavity was already open, and immediate massage quickly restored pulsation. His conclusions are emphasised as follows:—(1) In cardiac massage we have a very important adjunct to the methods of resuscitation, applicable in cases of heart failure during surgical operations, as also in certain other conditions. With stoppage of the heart during the performance of an abdominal operation, no time should be lost before starting subdiaphragmatic massage, and valuable time should not be wasted in the administration of drugs. Artificial respiration and cardiac massage should be carried out simultaneously. In such circumstances a very few compressions will usually re-establish the heart beat. (2) If heart massage be contemplated it should be commenced certainly within five minutes of cardiac arrest. Norbury would be inclined to resort to massage after giving other methods a trial of only two minutes. (3) It may be necessary to continue rhythmical compression of the heart for several minutes before spontaneous contractions occur. In one temporarily successful case mentioned in the paper the heart was massaged for thirty minutes before it could be made to beat; previous to this ordinary methods had been tried for forty-five minutes. (4) The subdiaphragmatic route is undoubtedly the most satisfactory of the various methods of access to the heart for purposes of massage. (5) Artificial respiration should be commenced as soon as normal breathing has ceased, and should be persevered with until spontaneous breathing is re-established. It may be necessary to continue artificial respiration for some minutes after the heart has been restored. (6) In obstinate cases means should be taken for raising the blood-pressure, either by pressure on the abdominal aorta, bandaging the extremities, or the application of Crile's pneumatic suit, if this be at hand. Intravenous infusion of weak solutions of adrenalin in normal saline is very efficacious.

and this will be especially applicable in cases where intravenous infusion with saline has already been started before the heart stopped, when adrenalin can be quickly added to the solution. In cases where an intravenous infusion is not being already carried out, this may be done quickly by using the internal saphenous vein, since the arms will be wanted for performing artificial respiration, or as an alternative the common carotid artery may be exposed in the neck, and a weak solution of adrenalin in normal saline solution be forcibly injected towards the heart by means of a syringe with a fine needle attached. (7) Injection of adrenalin solution into the heart cavities or wall is liable to set up fibrillary twitchings, and is of no use as a means of restoring normal cardiac contractions. (8) Never give up a case of apparent death under an anæsthetic as hopeless until cardiac massage and its various accessories have been given a fair trial.

The strength of adrenalin used in the infusion given in one of Norbury's successful cases was 2 drachms of 1 in 1,000 solution of adrenalin chloride in 2 pints of normal saline solution. Crile's pneumatic rubber suit is composed of a double layer of specially-prepared rubber, which, when inflated with a bicycle pump, exerts uniform pressure on the surface, so producing an artificial peripheral resistance. It is so constructed that one or more limbs, or the abdomen, may separately or in any combination be subjected to pressure. Crile has found this apparatus useful in operations attended by shock or collapse.

ALFRED E. BOYD.

GYNÆCOLOGY AND OBSTETRICS.

STEIN, HERBERT: *A Clinical Study of Ectopic Pregnancy: A new Ætiological Theory.* "Medical Record." Vol. 97. No. 12. P. 478.

STEIN believes that fertilisation occurs in the uterus; that when it occurs in the tube it is due to (1) Late ovulation—*i.e.*, late in regard to insemination. (2) Hypermotility of the spermatazoon. (3) Lodgment of the ovum in a recess or congenital ampulla of the tube. (4) Mild salpingitis causing stricture or interference with the ciliary motion or contractility of the musculature. He holds that if inflammation be present it must be mild, otherwise sterility would result. In the cases under review—viz., 43 ectopic pregnancies in 581 gynæcological operations—a long antecedent period of sterility was not found; it was most frequently seen in multiparæ under thirty. The author dwells particularly on the difficulty of diagnosis, and gives the startling intelligence that a correct diagnosis was made in but 60 per cent. of the patients.

BETHEL SOLOMONS.

Douglas, John: *Ruptured Ectopic Pregnancy in Uterine Cornu.* "Journal of the American Medical Association." Vol. 74. No. 9. P. 582

Salpingectomy had been done in December, 1916, for ruptured tubal pregnancy, the patient being *in extremis*. In March, 1919, the patient was brought under the care of Douglas once more. Tubal pregnancy was diagnosed, and it was thought the ovum would be found in the remaining tube. At operation a ruptured ectopic pregnancy was discovered at the cornu where the tube had been removed at the previous operation. The question is interesting as to how the fecundated ovum became attached to this point. Did it pass down the tube and across the cavity of the uterus, and attempt to enter the remains of the other tube? If this did not occur it must have reached its point of attachment by means of the peritoneal cavity, in which case it is a matter for conjecture as to where it became fecundated, and how or why it became attached to the remaining stump of the resected tube.

Bethel Solomons.

Nyulasy, A. J.: *Puerperal Infection: A Plea for Early Operation in Pelvic Septic Phlebitis.* "Surg. Gynec. Obst." March, 1920.

The author finds close association between polypoid decidual endometritis and puerperal sepsis, the involved decidua being prone to infection; he quotes Lea's statement that pelvic septic phlebitis is responsible for 30 to 50 per cent. of all deaths from puerperal infection. He believes that early operation in such cases is even more imperative than for appendicitis, and he emphasises the following points:—(1) Sub-involution is always a feature of polypoid decidual endometritis, and is an urgent indication for examining the uterine cavity. (2) After the uterine cavity has been cleared of placental remains or of polypoid decidua, in the absence of gross extra uterine lesions, the case should be closely watched; pulse, respirations and temperature being taken at least every two hours. (3) If the patient's condition progressively deteriorates, and when no other septic focus is found, pelvic septic phlebitis may be diagnosed even in the absence of localising pain, of rigors, or of femoral phlebitis. (The author, however, quotes a case where Jellett successfully tied the ovarian veins when infection was limited to the uterine wall.) Nyulasy has operated early on six cases in which he has resected thrombosed ovarian veins; five recovered.

Brooke Bland, P.: *Gonorrhœal Infection in Childhood.* "New York Med. Jour." March 20, 1920.

The author considers gonorrhœal infection to be one of the most serious maladies of infancy and childhood. It is less frequent in males than in females. Less frequent also in young girls than in those who have entered on their active menstrual life, hence deep pelvic involvement is relatively uncommon in childhood, and the disease tends more towards localisation. The infection, however, is extremely persistent and contagious, and family or institutional contamination is quite a usual occurrence. The term vulvovaginitis has been specially applied to gonorrhœal infections in little girls, because in such cases it is not, as in adults, chiefly limited to the vulva, but extends to the delicate undeveloped vaginal mucous membrane. This is possibly due to the absence of bactericidal vaginal secretions in children.

In the author's opinion gonorrhœal infection in childhood is far more common than is generally supposed, many cases being mistaken for simple catarrh. Various authorities quoted give from 63 to 85 per cent. of inflammatory lesions of the genitals in girls as gonococcal in origin.

Infection in the majority of cases is indirect and due to careless ignorance. Direct infection is uncommon, while parturient infection is comparatively rare.

In most cases the course of the disease is mild in children. Sometimes slight fever and constitutional disturbances mark the onset, but often pruritis, smarting, and the characteristic discharge are the first symptoms to attract attention. The inflammatory process, involving the vulva and vagina, very rarely extends higher than the cervix.

The diagnosis is made from the history, physical and microscopical examination, and by a serological or complement fixation test. The duration of the disease is as varied as its course. The acute stage lasts from three to six weeks. Some cases respond fairly promptly to active and early treatment, whilst in others the condition persists and recurs, and the author quotes one case in whom the disease was contracted at the age of seven, and from whom double pus tubes were removed at fourteen.

With regard to treatment, prophylaxis is of first importance, particularly in hospitals and institutions.

Active treatment must be purely local, and should consist in frequent copious irrigation through a rubber catheter, with warm water, followed by some mild, non-irritating antiseptic lotion. Once daily a 25 per cent. solution of argyrol may be injected into the vagina. Vaccines and general therapeutic measures are considered unsatisfactory. D. K. M. H.

Bandler, S. W. : *The Instincts, the Emotions, and the Endocrines in Sterility.* "Medical Record." Vol. 97. No. 10. Pp. 383, 411.

In a long paper, full of hypotheses without proof, Bandler makes such observations as "Everyone inherits instincts, emotions, endocrines." "Resemblance of a newborn infant to either of its parents or grand-parents is due to the fact that a like endocrine action has taken place along the phase of body development." A great many points in gynæcology are considered, but the author's main idea in writing the paper seems to have been to decry curettage and plastic operations on the cervix for the cure of sterility. He offers the following theory of treatment by endocrines :—(1) Give those extracts of which the body is producing too little. (2) If the body is producing too much of any one extract, attempt to counteract this over-activity by giving other hormones which diminish, oppose, or inhibit this over-secretion.

Bethel Solomons.

Evans, N. : *Malignant Myomata and Related Tumours of the Uterus.* "Surg., Gynec., and Obstet." March, 1920.

The author finds the present microscopic criteria of malignancy unsatisfactory in regard to myomata. In a series of some 4,000 cases of uterine fibromyomata at the Mayo Clinic, 72 diagnosed as "sarcomatous," "cellular," or "very cellular," were studied. Careful estimates were made of the actual numbers of mitotic figures seen in 100 fields of a $\frac{1}{12}$ inch oil-immersion lens. From the thickness of the sections the numbers of mitoses in 1 cubic millimeter were calculated. The tumours thus examined fell into three groups—(1) 13 showed from 2,200 to 12,000 mitoses per cubic m.m.; (2) 11 showed 200 to 800; (3) in the remaining 48 cases there were either no mitoses or only a very few. (The fact that there are no intervening numbers linking the first and second groups is noted as curious.) Eleven of the thirteen cases in group (1) had recurrences within from one to eighteen months, which caused death. In the other two groups there was no death from recurrence. Evans regards this as striking evidence of the importance of the mitotic count in estimating the malignancy of these tumours. He notes, too, that giant cells were numerous in group (3), and he believes that these multinuclear cells arose in the course of direct (amitotic) division of the nucleus which is often unaccompanied by cell division. He quotes Kimura's experiments which show that tumour cells which have been irradiated, and thus deprived of the power of invading tissues into which they are transplanted, grow in artificial media without

mitoses and presumably by direct (amitotic) cell-division. Thus tumours whose direct division predominates, apparently tend to benignity.

The colour of macroscopic specimens is characteristic but difficult to describe "including pink, yellow and grey." The tissue is softer, smoother when cut, and is more friable than in the benign fibroid.

GOFFE, J. RIDDLE: *The Origin of the Intrapelvic Treatment of the Stump after Supravaginal Hysterectomy for Fibroid Tumour of the Uterus.* "Boston Medical and Surgical Journal." Vol. CLXXXII. No. 3. P. 53.

GOFFE discusses the claims of Baer and Dudley to priority as the originator of this operation, and proves by definite records that the credit belongs to him, and the method should be named the Goffe operation.

BETHEL SOLOMONS.

COBB, FARRAR: *Radical Abdominal Hysterectomy for Cancer of the Cervix Uteri.* "Jour. Amer. Med. Assoc." January 3, 1920.

THE author presents a report on 60 cases operated on with an operative mortality of 11.6 per cent., and shows a 57.1 per cent. of five year cures in his work at the Massachusetts General Hospital. In all his cases with the exception of one, clinical diagnosis was verified by the pathologist. Six were in his opinion borderline cases. He is "absolutely certain that radium and cautery cannot cure the condition"; their place is only as palliatives in the treatment of inoperable cases. His deaths are accounted for by one from intestinal obstruction two months after operation, one from septic iliac thrombosis, three died from shock, "largely caused by hæmorrhage," and two died from general peritonitis.

Marked involvement of the vaginal wall and enlargement of the inguinal glands are definite contraindications to any operation. Fixation of the uterus and induration of the broad ligaments as found on vaginal examination are not contraindications to operation, as they are frequently due to inflammation. All such cases should be subjected to laparotomy.

He advises cautery to destroy and sterilise the cervix, in early cases just before the abdominal operation, in late cases some days before to allow of partial recovery during the period of waiting.

For anæsthesia he advises ether, combined whenever possible with intraspinal injection of tropacocaine or procaine, which he thinks lessen the shock and other post-operative disturbances.

He uses the ordinary median incision, which can be enlarged by division of the sheath of the rectus or by separating the rectus from the pubis. After ligation of the ovarian arteries the ureters are defined and tapes passed round them for traction. The internal iliac arteries are then tied. The ureters are next separated throughout their course. In two cases he accidentally cut the ureter. One patient died from shock contributed to by the time required to anastomose the ends. In the other there was a subsequent fistula and infection of the kidney necessitating nephrectomy. This patient is well. The time taken to perform anastomosis or implantation being so long, "one would be justified in ligating both ends of the ureters and staking recovery of the patient on the functional capacity of the other kidney."

After freeing the upper half of the vagina from the bladder and rectum, the ureters are lifted out of the way by the tapes; "the lateral parametrium well down the sides of the vagina should then be removed with scissors as close to the pelvic wall as possible." Drainage is effected through the vagina.

The difficulties of the operation lie in the complete isolation of the ureters and the arrest of hæmorrhage from the lateral pelvic wall. Early ligation of the internal iliacs is a decided help and does not in any way increase post-operative sepsis.

J. S. E.

RANSOHOFF, J. L.: *Late Results in the Radium Treatment of Cancer of the Uterus.* "Jour. Amer. Med. Assoc." January 17, 1920.

THE author begins by asking what place radium shall have in the treatment of carcinoma of the cervix? Thousands of cases are annually declared inoperable and must needs be aided by some other means than surgery. Radium has long been granted its position as the agent of choice in the treatment of inoperable cervical carcinoma. The question which now concerns us is whether it shall replace the radical operation in the treatment of so-called operable cancer of the cervix. As illustrative of the low percentage of operable cases, the high operative mortality, and low percentage of cures he mentions Clark as finding an operability of 15 per cent., Jacobson in collected cases having an operative mortality of 18.25 per cent., and only curing 11.72 per cent. of those patients who applied for treatment. In these days of low mortality attending nearly all major operations, no operation can possibly gain headway which combines with it a shockingly high mortality and a large majority of distressing and desperate sequelæ.

The immediate result of the radium treatment which causes no danger and little pain, is the palliation of symptoms, relief from hæmorrhage, pain, and foul discharge.

He now asks can radium permanently cure cancer of the cervix; if so, does the percentage of cure equal that of operation? If this is true the conclusion is obvious.

The author has a series of 32 cases, which included all cases observed varying from operable cases to those that were in the terminal stages of sepsis, 26 being primary and 6 recurrent. Eight of these patients had what was considered an incomplete course of treatment. Of the entire series, 6 patients, or 19 per cent., were well and free from all evidence of disease at intervals varying from nearly three to five and a half years after treatment.

In the author's opinion radium treatment should entirely supplant operation, not only in the treatment of inoperable cases, but also in operable cases of cancer of the cervix.

R. E. T.

Massart, Raphael: *The Ligature of the Internal Iliac Artery in Gynæcological Operations.* "New York Medical Journal." Vol. CXI. No. 3. P. 94.

In an illustrated article Massart describes the technique of Faure. He recommends it in all cases of hysterectomy for cancer of the uterus. The superior portion of the broad ligament is first opened, forceps grasp its posterior lip, which is drawn upward and backward. The ureter is used as a guide, and it is drawn backward and slightly outward toward the wings of the sacrum. The artery is separated by means of a grooved director, and a ligature is passed about the artery upon a long-handled and extremely-curved needle, which is figured in the paper. The chief dangers in the operation are ligature of the ureter and injury to the iliac veins.

Bethel Solomons.

Soresi, Angelo: *Hæmostasis Obtained with Small Rubber Bands instead of Ligatures.* "New York Medical Journal." Vol. CXI. No. 3. P. 96.

Soresi suggests rubber bands instead of ligatures for all vessels. Up to the present time he has only used them for large vessels because he could not obtain bands small enough for the small arteries.

Bethel Solomons.

Losee, J. R.: *Blood Transfusion in Obstetrics.* "Medical Record." Vol. 97. No. 7. P. 265.

Losee, who is pathologist to the New York Lying-in Hospital, gives his views and describes the technique of blood transfusion. He arrives at the following conclusions: (1) Serious hæmorrhage complicating pregnancy and labour has been successfully treated

by indirect blood transfusion. (2) In anæmia, secondary to *post-partum* hæmorrhage and pelvic sepsis, transfusion is definitely indicated, and produces satisfactory results, but it has little or no effect on patients suffering from bacteræmia or septic thrombophlebitis. (3) Inasmuch as indirect blood transfusion in obstetrics is often a life-saving procedure, obstetrical institutions should be prepared to perform the operation instantly and at any time.

BETHEL SOLOMONS.

OPHTHALMOLOGY.

POLLOCK, W. B. INGLIS: *The Action of Hypophysin (Pituitrin) upon the Pupil of the Rabbit.* "British Journal of Ophthalmology." March, 1920.

THE author has carried out an elaborate series of experiments upon rabbits. There is no record of previous work on the local application of pituitrin to the eyeball in warm-blooded animals by instillation. He gives us the following conclusions:—

Hypophysin (pituitrin, Parke, Davis & Co.) when applied to the eye of the rabbit by instillation produces a mydriasis in about 94 per cent. of the experiments, although it is necessary in some cases to repeat the application several times. The effect is increased by decentralisation, and still more by deganglionation of the dilator pupillæ or of the sphincter pupillæ, and most markedly by deganglionation of both dilator and sphincter pupillæ. (By "deganglionation," the author is careful to explain, he means excision of the ganglion, and "decentralised" cases are those in which the pre-ganglionic fibres were cut.)

When hypophysin is administered by intravenous injection the local mydriatic effect is lost if the blood pressure is raised; a miosis then occurs due to central stimulation of the third cranial nerve, which relaxes with the return of the blood pressure to normal, and is followed generally by a slight dilatation.

Hypophysin, like adrenalin, acts on the neuro-myal junctions, and since deganglionation does not cause degeneration of the terminal plexus, the presumption is that both drugs act upon this

W. C. MACFETRIDGE.

MANSON, W. HISLOP: *Personal Experiences of the Ocular Sequelæ of Malaria.* "Glasgow Medical Journal." March, 1920.

THIS is a *résumé* of the ocular sequelæ met with in a series of not less than 12,000 cases of malaria. The author states that practically every attack of malaria is followed by a slight icteric tinge of the conjunctiva. As a rule this tinging of the conjunctiva is

only visible when the lower lid is drawn down, though it sometimes happens that the inter-palpebral area of the conjunctiva is quite yellow. The colouration disappears as the patient recovers. In the author's opinion it is a valuable suggestive symptom when dealing with cases of pyrexia of uncertain origin.

Of the ocular sequelæ of malaria ulceration of the cornea was the most frequent, though, on the whole, it was not very common. It was never seen accompanying the primary infection. Usually the patient had had anything from twenty to fifty relapses of malaria. The ulcer was generally in the centre of the cornea and caused marked diminution of vision. These ulcers are liable to recur with each subsequent attack of malaria. They are very painful and heal slowly. Iritis frequently accompanies the ulceration. The best local treatment he found to be douching with normal saline and the instillation of atropine. The much-recommended application of absolute alcohol was, in his experience, very painful, and not of any great value.

Iritis apart from corneal complication did not occur.

Intra-ocular hæmorrhage was very rare. It only occurred in two cases. In each case the patient was infected by the malignant tertian parasite. There were three cases of lesions of the ocular nerves. Each had given a negative Wassermann. One was a case of paresis of the external rectus muscle, another was a paresis of accommodation. The third was a total ophthalmoplegia of the left eye occurring ten days after an attack of malaria. The two former cases did well, the last did not recover. To the administration of quinine in large doses certain injurious effects are attributed :—(1) Toxic amblyopia; (2) Optic atrophy; (3) Quinine amaurosis.

No case of the first two conditions was seen, although it was the custom to give up to 60 grains of quinine by the mouth each day for a week, in three doses of 20 grains. There were two cases of quinine amaurosis. One made a complete recovery. In the other total blindness resulted. In each case the patient had taken at a minimum in one dose, 80 grains of quinine.

W. C. MacFetridge.

RHINOLOGY.

Liebault : *Chronic Maxillary Sinusitis and Albuminuria.* "Revue de Laryngologie d'Otologie et de Rhinologie." March, 1920.

The author calls attention to the occurrence of albuminuria in conjunction with old-standing antral inflammation. Four cases are described in detail, the main features of which are similar :—Purulent discharge from nostrils and down the naso-pharynx of several years' standing, albuminuria varying between .03 per

cent. and .07 per cent. The general condition of the patients was poor, lack of energy and loss in weight being prominent.

Treatment either by repeated sinus puncture (two cases) or Caldwell Lue operation under local anæsthesia (two cases) was carried out, resulting in complete disappearance of albuminuria in three cases. The fourth case, in which there was evidence of a nephritis antedating the sinusitis, showed a marked improvement in the urinary condition. In all cases the general health became very much better. Considering the connection between the sinus and renal conditions, the author points to the digestive disturbances consequent on the swallowing of pus from the nasopharynx over a prolonged period. A constant absorption of toxins takes place in the bowel as a result. In view of the small number of sinus cases developing renal trouble he suggests that a state of "renal debility" may exist in these cases, forming a sort of prepared ground upon which the toxins act the more readily.

J. Stafford Johnson.

Rindu: *Primary Melanotic Tumour of the Palate.* "Revue de Laryngologie, d'Otologie et de Rhinologie," January 31, 1920.

Melanotic growths on mucous surfaces are very rare. Bonnet has collected twenty-two cases occurring in the nose and a like number in the mouth. Of the latter, sixteen originated in the palate and six in the gums.

In the case described, the patient, a soldier, aged forty-three, complained of pain and difficulty in swallowing. Eighteen months previously he had noticed small black spots on the hard palate which had progressively enlarged. On examination, a warty, irregularly pigmented growth, extending from the hard palate backwards, and involving the uvula, was seen. Small isolated pigmented patches surrounded the main growth. No ulceration had occurred, and the general appearance suggested rather a pigmented infiltration. Microscopical examination confirmed the diagnosis. No operation was attempted owing to military exigencies. Subsequent history of the case was death a year later from generalisation of the tumour, no operation being then possible.

J. Stafford Johnson.

ROYAL COLLEGE OF SURGEONS IN IRELAND.

The President, Vice-President and Council have elected Professor Grafton Elliott Smith, M.A., M.D., F.R.C.P., F.R.S., to the Mary Louisa Prentice Montgomery Lectureship in Ophthalmology. The subject of his first lecture will be "The Influence of Stereoscopic Vision on the Evolution of Man." The lecture will take place in October, 1920.

OBITUARY

BOMFORD, WILLIAM HAROLD. Died March 31, 1920. Born Co. Meath, 1885. Educated R.C.S.I., L.R.C.P. & S.I., 1908 Late House Surgeon, York Dispensary; Government Medical Officer, Fiji Civil Service. Died at Sara, Fiji.

CONNOLLY, JAMES JOSEPH. Died April 8, 1920. Educated R.C.S.I., L.R.C.P. & S. I., 1919. Died at Strandville Avenue, Dublin.

ELLIOTT, GEORGE BLACKER. Died March 22, 1920. Born in Dublin in 1865. Educated at the Royal College of Surgeons, Ireland, and King's College, London; L.R.C.S.I., 1885; L.A.H. Dub., 1887; late Demonstrator of Anatomy, Royal College of Surgeons, and House Surgeon, Richmond and Whitworth Hospitals; Medical Officer of Health, Brixham Urban District Council, and Medical Attendant, Brixham Cottage Hospital. Died at Brixham, of pneumonia.

ELLIOTT, WILLIAM HERRON. Died January 28, 1920. Educated at Trinity College, Dublin; B.A., M.B., B.Ch., B.A.O., 1914; Captain, R.A.M.C.; M.B.E. for service in East Africa, 1918. Died of influenzal pneumonia at 36 C.C.S., Cologne.

EVANS, JOHN. Died April 17, 1920. Educated at the Ledwich School, Dublin; L.A.H. Dub., 1874; L.R.C.S.I., 1890; Apothecary and Chemist to H. M. the King and H. R. H. the Prince of Wales; Member Board of Examiners, Apothecaries' Hall, Dublin. Died at Red Hill, Durban, Natal.

FFRENCH-MULLEN, DOUGLAS. Died April 2, 1920. Born 1852. Educated at Queen's College, Galway, and Steevens' Hospital, Dublin; M.D., 1872, M.Ch., 1873, R.U.I.; Entered Indian Medical Service 1877; retired Colonel 1912. Died at Hollywood, near Rochester.

KELLY, PETER BURROWES. Died April 6, 1920. Born 1889. Educated at the Catholic University School, Dublin, and at St. Bartholomew's and Charing Cross Hospitals, London. Surgeon, R.N.; L.R.C.P. & S.I., 1911. Specially recommended in Admiral de Robeck's dispatch from Gallipoli, dated July 1, 1915, and awarded the D.S.O.; was wounded in the foot on the morning of April 25th, in the *River Clyde*. He remained in the *River Clyde* until the morning of April 27th, during which time he attended 750 wounded men, although in great pain and unable to walk during the last twenty-four hours (Gazette). Died at Cookstown House, Ballytore.

HUNTER, DUNCAN FRANCIS. Died March 29, 1920. Born in London in 1882. Educated at Trinity College and Steevens' Hospital, Dublin; B.A., 1904; M.B., B.A.O., B.Ch., M.D., 1908; Dublin; Acting Resident, Steevens' Hospital, 1908; Resident Medical Officer, Brownlow Hill Infirmary, Liverpool; Lieutenant, R.A.M.C., November, 1915; Captain, 1916. Died at Wallesey, Cheshire.

NUNAN, FRANCIS. Died April 4, 1920. Born in Cork, April 23, 1847. Educated at Queen's College, Cork; B.A., 1867; M.D., 1869; Q.U.I., L.R.C.S. Edin., 1869; L.A.N. Dub., 1870; Medical Officer, Blarney Dispensary District. Died at Blarney.

O'GRADY, MICHAEL JOSEPH. Died April 16, 1920. M.B., B.Ch., B.A.O., 1906, R.U.I. Died at Clane, Sallins, Co. Kildare.

PYE, JOSEPH PATRICK. Died March 23, 1920. Born 1849. Educated at Queen's College, Galway, and at London and Paris. L.R.C.S. Edin., 1870; M.D., M.Ch., 1871, Q.U.I.; D.Sc. (*Hon. Causâ*), 1882, R.U.I.; Professor of Anatomy and Physiology, University College, Galway, 1877-1920; Hon. Surgeon, Galway Hospital.

ROE, EDWARD ALEXANDER HENRY. Died March 21, 1920. Born at Belturbet, June 28, 1839. Educated at Steevens' Hospital School. L.K.Q.C.P.I., 1868; L.R.C.S.I., 1868; Assistant Surgeon, Staff, May 24, 1869; Surgeon-Major, May 24, 1881; Surgeon, Lieut.-Colonel, May 24, 1889. Served in Afghan War, 1878-1880. Retired June 5, 1889. Died at Ballyconnell, Co. Cavan.

STOKER, GEORGE. Died March 23, 1920. Born in Dublin in 1855. Educated at Royal College of Surgeons, Ireland, and St. Thomas' Hospital, London. L.R.C.S.I., 1876; M.R.C.S. Eng., 1882; L., 1878; M.K.Q.C.P.I., 1882; formerly Surgeon, Imperial Ottoman Army; also served during Zulu War, 1879-80 (Medal), and the South African War, 1899-1900 (Medal with three Clasps); created C.M.G., 1900; Major, R.A.M.C., during the Great War and present at Suvla Bay. Died at the Officers' Hospital, Exeter.

STEPHENSON, EDWARD ALOYSIUS. Died April 6, 1920. Educated at the Catholic University School and Trinity College, Dublin. L.R.C.S.I., 1865; Lic. Med. Dub., 1865; L., 1866; M.R.C.P.I., 1883; M.D. (*Hon. Causâ*), 1915, N.U.I.; Medical Officer, Tramore Dispensary District. Died at Tramore.

TICHBORNE, JOHN. Died April 6, 1920. Educated in Trinity Coll., Dublin; B.A., M.B., B.Ch., B.A.O., 1897; M.A.,M.D., 1901; Surgeon, West African Frontier Force, Lokoja, 1897; Medal and Clasp for operations in Nigeria, 1898; Senior Medical Officer Ashanti Campaign, Medal and Clasp; Senior Medical Officer, Northern Nigeria, 1901; African General Service Medal and

Clasp, 1902; Lecturer on Tropical Hygiene, Colonial Office, 1907; Lieutenant, R.A.M.C., October, 1914; Captain, 1915. Died in London.

WILLIAMS, EVAN. Died April, 1920. Born 1841. Educated at Steevens' Hospital School, Dublin; M.R.C.S. Eng., 1866; L.K.Q.C.P.I., 1867; Hon. Surgeon, Carnarvon and Anglesey Infirmary; Medical Officer of Health, Llangeful Urban District, Anglesey. Died at Anglesey.

WORKMAN, CHARLES. Died March 8, 1920. Born in Belfast, 1853. Educated at Queen's College, Belfast, Guy's Hospital, Munich and Berlin. M.D., M.Ch., R.U.I., 1877; F.R.F.P.S. Glasgow, 1889; late Professor of Pathology at St. Mungo's College; Assistant Physician, Royal Hospital, Belfast. Died in Glasgow.

THE

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INCLUDING

THE TRANSACTIONS OF THE ROYAL ACADEMY OF MEDICINE IN IRELAND

FOURTH SERIES. No. 4 JUNE 1920

ORIGINAL COMMUNICATIONS

NOTE ON LUNACY ADMINISTRATION IN IRELAND, WITH SUGGESTIONS FOR REFORM.[a]

By R. R. LEEPER, Medical Superintendent, St, Patrick's Hospital Dublin; Lord Chancellor's Consulting Visitor in Lunacy.

EXISTING Irish Lunacy Legislation dates from the early Victorian Era. No Legislative measures altering or amending these Acts of Parliament have since been enacted into law. Efforts to amend and alter the lunacy legislation of this country have been repeatedly made, and the whole question of lunacy administration was most comprehensively dealt with in a report drawn up by the late Inspectors of Asylums—Sir George O'Farrell and Dr. Maziere Courtney. This report on the defects in the law and arrangements at present governing the treatment of the insane in Ireland was presented to Govern-

[a] Read in the Section of State Medicine, March 19, 1920.

ment in the year 1895. Three Royal Commissions have sat and reported on Irish Asylum Legislation. I myself gave evidence before the last, presided over by Sir Arthur Mitchell, in the year 1889, just thirty-one years ago, so that I cannot be said to have newly discovered an interest in this subject. Nothing resulted from all these commissions, alarms and excursions! Most regrettable, possibly, of all the failures to alter Irish legislation is the loss to Ireland of the child of the Royal Commission on the "Care and Control of the Feeble-minded"—the Mental Deficiency Bill.

According to the Report of this Royal Commission, upon which the Mental Deficiency Bill was based, Ireland (the Royal Commission states) in 1906 possessed 25,415 mentally defective persons *outside* of asylums; and that of these, no less than 66.06 per cent. were in need of immediate provision as to care and rational management, as against 44.45 per cent. in England and 34.57 per cent. in Scotland. All our efforts to have Ireland included in the Mental Deficiency Bill failed. In 1907, when the Irish Councils Bill seemed likely to become law, the Executive was again approached by the Irish Division of the Medico-Psychological Association with a series of valuable suggestions as to the necessity for amending lunacy legislation. Nothing happened—and this brings me to present-day conditions.

You are aware that the most representative deputation of the Irish Medical Profession that could be obtained recently waited on the present Chief Secretary for Ireland. You all know the result of that deputation anent the Ministry of Health Bill.

As Hon. Secertary to the Irish Division of the Medico-Psychological Association of Great Britain and Ireland, I forwarded to Government, by direction of my association, the following resolution, unanimously passed by the Irish Division at its autumn meeting, held in the Royal College of Physicians, in November, 1919:—

> "That the Irish Division of the Medico-Psychological Association of Great Britain and Ireland,

having read the clause in the Ministry of Health Bill, in which the treatment of mental defects is mentioned as one of the objects of that measure, respectfully suggest that in the appointment of an Irish Public Health Council, due representation should be given on that Council to that branch of the profession specially concerned with the treatment of insanity in Ireland."

The result of this considered and unanimous resolution by the Irish Division of Asylum Physicians was that the Public Health Council was set up without, so far as I am aware, a single representative of the asylum or lunacy service—either legal, medical, or lay—being placed upon it. At first we thought that this newly-appointed Council would leave the consideration of asylum administration alone. Not so, however. We heard that they were about to deal with it—possibly advise, and alter or amend the laws affecting asylums, and draw upon their vast experience for the purpose. The play without Hamlet, or the Rabeleasian Judge, who decided all cases by the throwing of dice, seem to me to be somewhat similar absurdities. My association viewed the condition with anxiety: mental alienation is our daily contemplation, but this new Council about to deal with the asylums of Ireland seemed to be a piece of mental alienation singularly out of place.

We decided, somewhat reluctantly, to go before this Council as a deputation, and respectfully place our views before them in the form of a memorandum, drawn up by the most experienced alienists in Ireland. This memorandum will shortly be printed and circulated amongst the committees of asylums and others interested in the treatment of insanity in Ireland, and it is my good hope that when legislative changes occur, they will be initiated by persons not entirely governed by motives of political or economical expediency, but by men guided by experience and progressive, scientific thought, and with the fullest sympathy with those helpless beings known generally as the insane.

In a previous communication which I had the honour to bring before this Section of the Academy some years ago, I endeavoured to point out the desirability of trying to limit, to some extent, the obvious causes working in the country which tend to produce insanity, crime, and degeneracy. Foremost amongst these is the continued and wilful neglect of the care and control of the feeble-minded. No poor law reform has since been attempted. We are still weary watchers for the dawn of poor law reformation. The workhouse is still with us—an active lunacy manufactory running by State aid. The feeble-minded child is still uncared for, and often even unrecognised until a life of crime, degradation, and moral depravity brings its poor, unstable mind and enfeebled body under the cognisance of the gaol, workhouse, or asylum authorities. Fortunate is the case, if this neglect has not been already the cause of the existence of other feeble-minded persons, more unstable than their parents.

Recently I have been convinced that an effort should be made in Ireland to set up some form of specialised institution or colony for the treatment of epileptics. No such institution exists in Ireland, and the lot of these afflicted persons is often very miserable. Some years ago the late Countess of Meath manifested her sympathy with the so-called sane epileptic by founding a home at Godalming, in Surrey, for the care of epileptic women. This great philanthropist offered to pay half the cost of establishing a similar institution in Ireland, but no one could be found to contribute the other half of the cost, and Lady Meath's proposal ended in nothing. I feel strongly that any broad measure dealing with public health in Ireland should consider the necessity of founding a colony for these distressing cases, where they could be cared for, as they are in similar establishments in other lands, and similar occupations provided for them. A specialised approved home, such as would be established under the Mental Deficiency Act, might meet the requirements of these patients, and alleviate their sufferings and brighten their lives.

Whenever the Government of Ireland alters and amends our lunacy legislation it is devoutly to be hoped that it may be for the better, for one cannot but remember that changes are not always productive of good, however well intended. If legislative changes are to benefit the service, they must be initiated by those whose life interest has been the betterment of the insane, and whose experience and knowledge entitles them to deal with so difficult and specialised a subject.

We know that our present condition of efficiency and the structural suitability of our newer and larger asylums was largely due to the energy and ability of those who have worked amongst us, and are now gone from us—men whose life-work was to safeguard and improve the Irish Asylum Service. Our workers of to-day try and succeed in upholding these great traditions. We hope for much improvement in our speciality from the modern methods of psychotherapy, and we dread the acceptance of any legislative measure which would have a degenerating influence upon the care and treatment of the insane in Ireland, or remove from them that constant care and medical treatment which must ever be the sick man's charter and right.

MORTALITY FROM INFLUENZA IN IRELAND.

By SIR WILLIAM J. THOMPSON, M.D., Registrar-General.

SINCE the period of the Great Famine ("The Black Forty-seven"), with its awful attendant horrors of fever and cholera, no disease of an epidemic nature created so much havoc in any one year in Ireland as influenza in 1918, for during that year, out of a total of 78,695 deaths from all causes registered, no less than 10,651 deaths, or 13.5 per cent., were ascribed to this cause.[a]

Stated in terms of the population, it would appear that the 10,651 deaths from influenza are equivalent to 243 per 100,000 inhabitants.

When comparison is made with the number for 1917—viz., 1,438, or with the annual average for the ten years, 1908-17—viz., 1,234, or even with the highest annual number recorded prior to 1918—viz., 4,677 in 1900—an idea will be formed as to the extent of the ravages of influenza in 1918.

Furthermore, deaths from pneumonia, which numbered 4,111 in 1917, rose to 6,120 in 1918, showing an increase of 2,009 deaths, and as pneumonia was closely associated with the epidemic of influenza, it may, I think, be fairly assumed that an appreciable number of deaths in 1918 classified to pneumonia were in reality cases of influenza, although not so stated in the medical certificates.[b] Further reference will be made to this aspect of the case.

[a] It has been ascertained that the number of fatal cases attributed to influenza in Ireland as registered during the quarter ended 31st March, 1919, was 5,716 (deaths of males numbering 3,020 and of females 2,696), so that for the fifteen months ended 31st March last 15,867 deaths, in which influenza was returned as a cause of death, were registered.

[b] In 4,378 instances, out of a total of 5,716 deaths ascribed to influenza during the quarter above referred to, one or more diseases were stated in the medical certificates to be associated with influenza, and in 1,338 cases influenza merely was given as the cause of death. Of the 4,378 cases in which a cause secondary to influenza was returned, as many as 3,065 were stated to be deaths from influenza associated with pneumonia.

The following table gives the mortality from influenza for each year from 1864 (the first year of the operation of the Act for the Registration of Deaths in Ireland) to the year 1918 :—

TABLE I.—Showing the number of deaths from Influenza registered in Ireland during each of the fifty-five years, 1864-1918, with the mortality per 100,000 of the population.

	DEATHS FROM INFLUENZA.				
YEAR	Number	Rate per 100,000 of Population	YEAR	Number	Rate per 100,000 of Population
1864 ...	311	6	1892 ...	3,742	81
1865 ...	220	4	1893 ...	1,310	28
1866 ...	189	3	1894 ...	2,032	44
1867 ...	164	3	1895 ...	1,896	42
1868 ...	96	2	1896 ...	729	16
1869 ...	180	3	1897 ...	1,535	34
1870 ...	166	3	1898 ...	2,277	50
1871 ...	105	2	1899 ...	1,716	38
1872 ...	132	3	1900 ...	4,677	105
1873 ...	100	2	1901 ...	1,381	31
1874 ...	100	2	1902 ...	1,258	28
1875 ...	124	2	1903 ...	1,553	35
1876 ...	121	2	1904 ...	1,184	27
1877 ...	93	2	1905 ...	1,219	28
1878 ...	54	1	1906 ...	978	22
1879 ...	74	1	1907 ...	1,720	39
1880 ...	69	1	1908 ...	1,798	41
1881 ...	54	1	1909 ...	1,303	30
1882 ...	39	1	1910 ...	1,332	30
1883 ...	87	2	1911 ...	992	23
1884 ...	43	1	1912 ...	1,025	23
1885 ...	36	1	1913 ...	1,174	27
1886 ...	34	1	1914 ...	696	16
1887 ...	26	1	1915 ...	1,568	36
1888 ...	44	1	1916 ...	1,014	23
1889 ...	21	0	1917 ...	1,438	33
1890 ...	1,712	36	1918 ...	10,651	243
1891 ...	891	19			

This table shows that from 1864 to the end of 1889 the

deaths from influenza varied from the comparatively small number of 311 for the former year to 21 for the latter, the average annual number for the whole of that period being only 103. An outbreak of influenza in 1890, however, brought the number up to 1,712, or 36 in every 100,000 inhabitants, followed by 891 (or 19 per 100,000) in 1891, and by 3,742 (or 81 per 100,000) in 1892.

During the next seven years the deaths varied from 729 in 1896 to 2,277 in 1898. Two years later, in 1900, the number of deaths registered as from influenza was 4,677, or 105 in every 100,000 of the population, being the highest annual mortality from this cause recorded for Ireland in the years preceding 1918; but, as will be observed, this mortality is far below that recorded for last year.

As further illustrating the extent of the ravages of the recent epidemics, a comparison is instituted between the fatal cases of influenza in 1918, and the highest mortality since the year 1864 from other diseases of an infectious nature. The facts are given in the following table :—

TABLE II.—Showing the Highest Mortality from Principal Epidemic diseases during the period 1864-1918, as compared with that from Influenza in 1918.

CAUSE OF DEATH	Year	Number of Deaths	Rate per 100,000 of Population
Enteric Fever ...	1898	1,284	28
Typhus ...	1880	934	18
Small-pox ...	1872	3,248	61
Measles ...	1878	2,212	42
Scarlet Fever ...	1874	4,034	76
Whooping-cough ...	1868	2,380	44
Diphtheria ...	1874	565	11
Influenza ...	1918	10,651	243

The highest mortality, apart from influenza, shown in the above table, viz., 4,034 deaths from scarlet fever (small-

pox following with 3,248 deaths), is far below that recorded for influenza.

As has been already stated, registration of deaths by statutory enactment came into force in Ireland in 1864, and in Table I. the mortality from influenza is shown for each year from the earliest year of registration.

Information for decennial periods from 1831 to 1871 is, however, obtainable from the various reports of the Census Commissioners; and although the figures may be open to question as regards their accuracy, still the Census figures and the Commissioners' observations thereon may be found interesting, if not instructive.

In the following statement deaths from influenza in Ireland are shown by decennial periods :—

Period	No. of Deaths from Influenza	Annual Average	
1841-1851 ...	10,753 ...	1,075	From Census Reports
1831-1841 ...	10,575 ...	1,056	
1851-1861 ...	14,484 ...	1,448	
1861-1871 ...	2,184 ...	218	
1871-1880 ...	972 ...	97	From Registrar General's Report
1881-1890 ...	2,096 ...	210	
1891-1900 ...	20,805 ...	2,081	
1901-1910 ...	13,726 ...	1,373	
1911-1917 ...	7,907 ...	1,130	
1918 ...	10,651 ...	—	

The Census Commissioners of 1841 report under the heading, "Influenza" :—"The deaths attributed to this disease amount to 10,575, as 100 males to 84.65 females; being 1 in 112.28 of the deaths from all causes, and 1 in 36.05 of those of the epidemic class, of which it is the 9th most fatal disease.

"In the 'Treatise of Ireland,' by John Dymmok, written about the year 1600, we learn that "the inhabitants, but especially the sojorners there, be very subject to rheums,

cattars and fluxes.' Boate writes, that in the English armies, which were quartered in Ireland in 1641, and after, 'were not only the looseness and the malignant feaver wherof we have spoken above as of Ireland's reigning diseases, very common, but then besides several other infirmities—viz., *violent coughs* and of long continuance, *stopping of the breath*, called in Latin *Dispnœa.*'

" For the first and best account of this '*leaguer sickness*' in Ireland we are indebted to Sir T. Molyneux, M.D., who described a 'transient fever' of this description, accompanied with "*general epidemic, coughs and colds*," in 1688, and subsequently in 1693, when it was known to prevail over Europe generally.

" Rutty witnessed an invasion of an universal epidemic catarrh, in 1729, and again in 1737, when the weekly Bill of Mortality for Dublin rose to 144. The years 1762 and 1782 were likewise memorable for its attacks. Many epizootic diseases of remarkable fatality have been recorded by authors as appearing contemporaneously with influenza and other epidemics. A memorable instance of this kind is mentioned in 1751, and again in 1764. Although influenza has been occasionally epidemic in Ireland for so long a period no very violent outbreak occurred during the present century (nineteenth) till the years 1833-34, and again with marked fatality in 1836-37, when, according to calculations made by Dr. Graves, " we may conclude that in Dublin alone more than 4,000 people died of the Influenza, not taking into account the greater number who, although they got over the immediate attack of the epidemic, sank afterwards under various diseases of which Influenza laid the foundation."

" This calculation, although far above what we may suppose was the actual mortality from this cause, serves to mark the violence of the epidemic which then raged.

"The Census returns exhibit a remarkable increase of deaths from this disease in the latter year (1837), being 509 males and 363 females.

" The mortality from this cause does not seem to have

been much influenced by locality, having prevailed almost equally in the civic and rural districts; the deaths under this head were 1 in 81.16 in Leinster; 1 in 99.45 in Munster; 1 in 207.72 in Ulster; and 1 in 135.9 in Connaught. It is not, however, a disease so well or generally known to the people as others of the same class. It is described in the MSS. under the term *Fuacht*, as well as *Slaodan*, which is mentioned in the Annals of the Four Masters as epidemic in Ireland in the fourteenth century; and also *Creatan*, probably from *Creat*, the thorax, in which latter sense it is understood to be incidental to old age.

"It has prevailed at all ages from one month to ninety years."

Mortality in Great Britain.

The total number of deaths of civilians in England and Wales classified to influenza during the year 1918 amounted to 104,738, being equivalent to a rate of 313 per 100,000 of the estimated civilian population.

Deaths assigned to this cause in Scotland during the year 1918 numbered 10,923 (from January to June 128[a], and from July to December 10,795). During the 10 months from July, 1918, to April, 1919, the number of deaths attributed to influenza in Scotland amounted to 17,575, affording an annual rate of 432 in every 100,000 of the population. It will be understood that the figures for Scotland, above referred to, are not comparable with those for Ireland or for England and Wales.

Mortality in Ireland by Sexes and by Localities.

Of 10,651 deaths in Ireland in 1918 (or 243 per 100,000 of the population), 5,591 were those of males and 5,060 of females. This information by territorial divisions is shown in the following Table :—

[a] Not including deaths in which influenza was one of two or more named causes. In the second half of 1918 all influenza deaths are included.

TABLE III.—Showing, by Sexes, the number of deaths from Influenza registered in each county and county borough in Ireland during the year 1918, with the respective rates per 100,000 of the population.

COUNTY, &c.	DEATHS FROM INFLUENZA			
	Males	Females	Total	Rate per 100,000 of Population
Carlow	64	53	117	323
Dublin	272	255	527	306
Kildare	156	107	263	395
Kilkenny	95	82	177	237
King's	67	31	98	172
Longford	34	40	74	169
Louth	84	76	160	251
Meath	78	49	127	195
Queen's	57	48	105	192
Westmeath	64	35	99	165
Wexford	189	159	348	340
Wicklow	123	77	200	329
Clare	31	17	48	46
Cork	281	188	469	149
Kerry	93	57	150	94
Limerick	105	116	221	211
Tipperary, N. R. ...	72	71	143	227
Tipperary, S.R. ...	96	84	180	201
Waterford	39	39	78	138
Antrim ...	232	215	447	230
Armagh	221	226	447	372
Cavan	93	64	157	172
Donegal	258	267	525	312
Down	338	337	675	330
Fermanagh	36	32	68	110
Londonderry	119	131	250	249
Monaghan	125	103	228	319
Tyrone	168	144	312	219
Galway	143	120	263	144
Leitrim	39	24	63	99
Mayo	97	73	170	88
Roscommon	59	42	101	107
Sligo	70	30	100	127
County Boroughs :				
Dublin	630	610	1,240	406
Belfast	688	826	1,514	385
Cork	71	55	126	164
Londonderry	75	75	150	375
Limerick	79	48	127	330
Waterford	50	54	104	379
Total of County Boroughs	1,593	1,668	3,261	370
Remainder of Ireland ...	3,998	3,392	7,390	211
Provinces :				
LEINSTER	1,913	1,622	3,535	304
MUNSTER	917	729	1,646	159
ULSTER	2,353	2,420	4,773	302
CONNAUGHT	408	289	697	114
IRELAND ...	5,591	5,060	10,651	243

The foregoing table shows that, while the deaths for each sex applicable to the whole country do not differ to any appreciable extent, being in the proportion of 100 males to 91 females, the deaths of females in the province of Ulster exceed those of males, the 1,514 deaths in Belfast county borough alone comprising 826 of females and 688 of males from influenza. Doubtless the extensive employment of females in the factories and workshops of Belfast would account for the excess in the female mortality. In the provinces of Leinster, Munster and Connaught the deaths of males are decidedly higher than those of females. In the year 1900, during which a high mortality from influenza was recorded, as also in 1892, the deaths of females from this cause exceed those of males. (Table V.)

Table III. also shows that the highest rate for any county or county borough area is 406 per 100,000 of the population for Dublin county borough, Kildare following with 395 per 100,000; Belfast county borough, 385; Waterford county borough, 379; Londonderry county borough, 375; and Armagh county, 372 per 100,000 of the population. The six counties having the lowest rates per 100,000 of the population were: Clare (46), Mayo (88), Kerry (94), Leitrim (99), Roscommon (107), and Fermanagh (110).

The rate for the province of Leinster was 304 per 100,000; for Ulster, 302; for Munster, 159; and for Connaught, 114.

Excess of Deaths from Pneumonia.

It has been suggested that a large proportion of the heavy mortality assigned to pneumonia in 1918, during which year the deaths rom this cause outnumbered those in 1917 by more than 2,000, should be considered as influenza cases, although not returned as such in the medical certificates.

The following Table gives an analysis of this excess mortality :—

TABLE IV.—Showing, by counties, &c., the mortality from Pneumonia in Ireland during the year 1918, as compared with 1917.

County, &c.	Deaths from Pneumonia			
	Number in 1917	Number in 1918	Rate per 1000.000 of Population in 1918	Increase (+) or Decrease (—) in rate for 1918 as compared with 1917
Carlow	34	25	69	— 25
Dublin	171	308	178	+ 79
Dublin Co. Borough	513	985	323	+ 155
Kildare	61	98	147	+ 55
Kilkenny ...	38	59	79	+ 28
King's	46	58	102	+ 21
Longford ...	18	32	73	+ 32
Louth	56	85	134	+ 46
Meath	54	103	158	+ 75
Queen's	31	54	99	+ 42
Westmeath ...	27	62	103	+ 58
Wexford	88	119	116	+ 30
Wicklow	42	59	97	+ 28
Clare	72	74	71	+ 2
Cork Co. & Co. Boro'	384	510	130	+ 32
Kerry	116	139	87	+ 14
Limerick Co. & Co. Boro'	105	191	134	+ 61
Tipperary, N.R. ...	35	36	57	+ 1
Tipperary, S.R. ...	89	120	134	+ 35
Waterford Co.& Co. Boro'	85	64	76	— 25
Antrim	181	240	124	+ 31
Armagh	126	151	126	+ 21
Belfast Co. Boro' ...	594	1,063	270	+ 119
Cavan	99	107	117	+ 8
Donegal	104	163	97	+ 35
Down	230	215	105	— 8
Fermanagh... ...	62	70	113	+ 13
Londonderry Co. & Co. Boro'	104	283	202	+ 128
Monaghan	47	78	109	+ 43
Tyrone	112	170	119	+ 40
Galway	148	166	91	+ 10
Leitrim	34	35	55	+ 2
Mayo	141	125	65	— 8
Roscommon ...	36	37	39	+ 1
Sligo	28	36	46	+ 11
Provinces				
LEINSTER	1,179	2,047	176	+ 75
MUNSTER	886	1,134	110	+ 24
ULSTER	1,659	2,540	161	+ 56
CONNAUGHT ...	387	399	65	+ 2
IRELAND ...	4,111	6,120	140	+ 45

As shown in the foregoing table, the excess figures for Dublin county borough (155 per 100,000), for Londonderry county and county borough (128), for Belfast county borough (119) and Dublin county (79) are rather remarkable. If it be accepted that the deaths in question were in reality due to influenza, these areas, and especially Dublin, paid a heavy toll to the great epidemic.

Ages at Death.

The rates per 100,000 of the population at each age-period represented by deaths from influenza in 1918 were as follows :—Under 5 years, 295; 5-10 years, 120; 10-15 years, 103; 15-20 years, 228; 20-25 years, 329; 25-35 years, 380; 35-45 years, 239; 45-55 years, 222; 55-65 years, 226; 65-75 years, 221; and for persons aged 75 years and upwards, 256 per 100,000 of the population at this age-period, the rate for the whole country at all ages being 243.

The distribution of deaths by age-periods and the proportion at each of the nine age-periods selected are shown in Table V. for the year 1918, as compared with 1900 and 1892, years during which the highest mortality from influenza in the years' preceding 1918 was recorded for Ireland.

This Table shows the very high percentage of deaths at the ages between 15 and 45 years in 1918 as compared with the facts for other years selected as having a high mortality rate from this disease, and the markedly low percentage of deaths of persons 45 years and upwards, especially the proportion of persons 55 and upwards.

No less than 55.5 per cent. of all the deaths from influenza in 1918 were those of persons 15 and under 45 years of age, as compared with 12.5 per cent. for 1900 and 16.0 per cent. for 1892. Deaths of persons 45 years and upwards in 1918 were equivalent to 23.7 per cent. of the total deaths from influenza in that year, those at 55 years and over being only 15.5 per cent. In 1900 the percentage of deaths at 45 years and upwards was 71.1, the percentage at 55 and

TABLE V.—Showing, by sexes and age-periods, the number of deaths from Influenza, registered in Ireland during the year 1918, as compared with 1900 and 1892, with the proportion per cent. of the deaths at each age-period.

YEAR	SEX	DEATHS FROM INFLUENZA AT AGE PERIODS.									
		Under 5 Years	5–15	15–25	25–35	35–45	45–55	55–65	65–75	75 and upwards	Total All Ages
1918	Males	625	431	1,205	1,390	706	448	317	321	148	5,591
1900	Males	257	64	86	92	122	202	418	528	437	2,206
1892	Males	306	75	97	86	112	198	305	358	294	1,831
1918	Females	621	533	997	1,032	579	427	321	373	177	5,060
1900	Females	238	69	106	78	103	257	534	622	464	2,471
1892	Females	241	93	122	85	98	204	357	417	294	1,911
1918	Males and Females	1,246	964	2,202	2,422	1,285	875	638	694	325	10,651
1900	Males and Females	495	133	192	170	225	459	952	1,150	901	4,677
1892	Males and Females	547	168	219	171	210	402	662	775	588	3,742
		PROPORTION PER CENT. OF TOTAL DEATHS.									
1918	Males	11.2	7.7	21.6	24.8	12.6	8.0	5.8	5.7	2.6	100.
1900	Males	11.8	2.8	3.9	4.2	5.5	9.2	18.9	23.9	19.8	100.
1892	Males	16.7	4.1	5.3	4.7	6.1	10.8	16.7	19.6	16.0	100.
1918	Females	12.3	10.5	19.7	20.4	11.4	8.4	6.4	7.4	3.5	100.
1900	Females	9.6	2.8	4.3	3.2	4.2	10.4	21.6	25.2	18.7	100.
1892	Females	12.5	4.9	6.4	4.5	5.1	10.7	18.7	21.8	15.4	100.
1918	Males and Females	11.8	9.0	20.7	22.7	12.1	8.2	6.0	6.5	3.0	100.
1900	Males and Females	10.6	2.8	4.1	3.6	4.8	9.8	20.4	24.6	19.3	100.
1892	Males and Females	14.6	4.5	5.8	4.6	5.6	10.7	17.7	20.7	15.8	100.

TABLE VI.—Showing a comparison of the age distribution relating to deaths from Influenza and Pneumonia registered in Ireland during the year 1918, with deaths from the same causes in 1902 and 1892, and with deaths from all causes in a normal year, taken as 1917.

YEAR	Cause of Death	PROPORTION PER CENT. OF DEATHS AT AGE-PERIODS.									
		Under 5 Years	5–15	15–25	25–35	35–45	45–55	55–65	65–75	75 and over	Total
1918	Influenza	11.8	9.0	20.7	22.7	12.1	8.2	6.0	6.5	3.0	100.
1900	Influenza	10.6	2.8	4.1	3.6	4.8	9.8	20.4	24.6	19.3	100.
1892	Influenza	14.6	4.5	5.8	4.6	5.6	10.7	17.7	20.7	15.8	100.
1918	Pneumonia	28.8	7.1	11.6	13.0	8.7	8.4	8.1	9.2	5.1	100.
1900	Pneumonia	23.5	4.1	5.7	7.8	10.8	11.7	16.4	12.8	7.2	100.
1892	Pneumonia	17.4	5.3	6.7	7.0	9.9	14.2	17.9	13.8	7.8	100.
1917	All Causes	15.8	3.4	5.5	5.6	6.7	8.2	11.0	19.6	24.2	100.

upwards being 64.3, and in 1892, deaths at 45 years of age and upwards were 64.9 per cent. of the total, deaths at 55 and upwards being equivalent to 54.2 per cent. of all the deaths from influenza registered during that period.

Of the deaths from influenza in 1918, 11.8 per cent. were those of children under 5 years of age, the percentage of such deaths for 1900 and 1892 being 10.6 and 14.6 respectively.

The marked difference between the relative frequency of deaths from influenza in 1918 at the several age-periods and the deaths from all causes in 1917 at the same age-periods is exemplified in Table VI. Figures are also given for the years 1900 and 1892, in addition to particulars regarding pneumonia.

The peculiarity regarding the influenza figures shown in the above Table has been already commented upon in contrast with those for 1900 and 1892.

It will be seen from this Table that the percentages for pneumonia at the several age-periods in 1900 and in 1892 show a rather close similarity, and up to 35 years of age there does not appear to be any very material difference between the relative frequency of deaths from pneumonia in each of those years and deaths from all causes in 1917, selected as a normal year. The distribution of the deaths from pneumonia in 1918 follows a markedly different course and much more in line with the influenza figures for that year, thus affording further evidence in support of the view that many of the deaths returned as from pneumonia were in reality deaths from influenza.

In conclusion it may be considered worthy of note that if the mortality from influenza in 1918 had only reached the normal, the number of deaths from other causes being the same as is shown in my Annual Report, a record for low mortality in Ireland would have been the result.

Gigantism of Breasts.

NOTE ON A CASE OF GIGANTISM OF BREASTS (DIFFUSE VIRGINAL HYPERTROPHY).

By B. F. HONAN;
House Surgeon, Richmond Hospital, Dublin.

As cases of the above-mentioned condition appear to be comparatively rare, I venture to submit a brief report of a a marked example, lately under the care of Mr. Conway Dwyer at the Richmond Hospital.

Patient N.C., aged 16, was admitted to hospital complaining of the inconvenience caused by the enormous size of her breasts. She had enjoyed perfect health until her thirteenth year, when menstruation commenced, the periods and interval being quite normal. At this time the breasts became enlarged, but not in her opinion to any excessive degree. A year later she considered their size to be abnormal, but was still without inconvenience of any kind on their account. Subsequently progressive enlargement ensued, until eventually it was necessary to support the mammæ by means of sling bandages, and at length compelling her to seek relief in hospital.

On examination, both breasts were enormously enlarged, heavy, and with a somewhat pedunculated appearance. The consistency was soft, except that numerous firm nodules were to be felt scattered diffusely throughout the organ, suggesting the presence of multiple fibro-adenomata. Tenderness and pain upon palpation were absent. The intestinal tract was radiographed, to discover if any intestinal stasis might be correlated with the condition; the result was negative.

Amputation appearing to be the only treatment of any value to the patient, one breast was removed at a time, in order to obviate excessive shock. No ill-results ensuing, the second organ was removed a few days subsequently. Patient made an uninterrupted recovery.

Pathological Report.—Weight of right breast, 2½ kilogrammes; weight of left breast, 3 kilogrammes. Histological examination showed a structure similar to that of fibro-adenoma, with a small amount of cellular infiltration in the neighbourhood of some of the gland acini.

REVIEWS.

A *Text-Book of Gynæcological Surgery.* By Comyns Berkeley, M.A., M.C., M.D. (Cantab.); F.R.C.P. (Lond.); M.R.C.S. (Eng.); Gynæcological and Obstetric Surgeon to the Middlesex Hospital, &c. And Victor Bonney, M.S., M.D., B.Sc. (Lond.); F.R.C.S. (Eng.); M.R.C.P. (Lond.); Assistant Gynæcological and Obstetric Surgeon to the Middlesex Hospital, &c. Second Edition, with 489 Illustrations in the text and 16 Colour Plates. London: Cassell & Company, Ltd. 1920. Cr 8vo. Pp. 829 + xii.

This second edition of Bonney and Berkeley's Gynæcology is an immense improvement on the first. The number of pages is increased by over 200, and of illustrations by nearly 100. We deprecate most emphatically the present fashion of authors to increase the size of their works with each succeeding edition, but in this case the enlargement is more than justified by the value of the contents.

To the surgeon who loses his temper in the operating theatre we refer Chapter I. We have never met such a pleasing, well-balanced exposition of the "bearing of the surgeon." It might have been written by Osler in his happiest vein, and it should be reprinted and published in the leading medical journals. Technique is well treated, and many devices are suggested as time-savers. Wrist reels, knee trays, and other plans are illustrated, and carefully described in the text. Wertheim's operation is the choice for cancer of the cervix uteri, and the authors state that the bane of post-operative sepsis in these trying cases has been largely removed by the employment of a solution of brilliant green and crystal violet—a solution which has the advantage that it is a powerful antiseptic, and can be used for some hours without injury, both as a vaginal pack and an abdominal paint. For myoma,

myomectomy is the favoured operation. The exploration of the uterine cavity is advised in all cases for fear of missing a fibroid; while this prevents the tumour from being overlooked, it adds to the danger of the operation. When hysterectomy is necessary, the subtotal operation is recommended, and the ovaries are conserved. The time has come when the nomenclature for suspending the uterus to the abdominal wall should be standardised. An operation of "ventro-fixation" is described, and has been found safe, but a modification of Gilliam's operation is evidently the chief practice of the authors when treating retroversion of the uterus. It would have been advantageous had several other operations been more freely illustrated—*e.g.*, the cure of vesico-vaginal fistula; and there are no figures to illustrate the operation for the cure of recto-vaginal fistula. The useful Schultze's spoon forceps should have been mentioned. Most of the common intestinal operations are well described, but it will be questioned whether it is within the province of the gynæcologist to perform an abdomino-perineal excision of the rectum.

The chapters which deal exhaustively with post-operative complications are full of interest, and will be as valuable to the general surgeon as to the gynæcologist.

We congratulate the authors and the publishers on the production of a classic, which is an important addition to British gynæcological literature. B. S.

Diseases of the Throat, Nose and Ear. For Practitioners and Students. By W. G. Porter, M.B., B.Sc., F.R.C.S. (Edin.). Third Edition, fully revised, under the Editorship of A. Logan Turner, M.D., F.R.C.S. (Edin.) Bristol: John Wright & Sons, Ltd. 1919.

The fact that another edition of the late Dr. Porter's excellent handbook for students has been called for by the publishers within such a short time is the best proof

of its popularity. The new edition has been thoroughly revised by Dr. Logan Turner, and the book retains all its old characteristics, which made it *par excellence* the best small book for students.

We will continue to recommend it at our nose, throat and ear clinics as the most suitable book for beginners.

Oto-Rhino-Laryngology. For the Student and Practitioner. By Dr. Georges Laurens. Authorised English Translation of the Second Revised French Edition by H. Clayton Fox, F.R.C.S. (Ireland). Bristol: John Wright & Sons, Ltd. 1919.

This is a text-book for students, and more particularly for general practitioners. The author's main idea is that all practitioners should be able to see into the ear, nose and throat, and to make a simple diagnosis. He lays down the simplest technique, and shows that it is within the compass of every doctor. A quotation from the Foreword by Dr. Dundas Grant expresses the aims and objects so clearly that, without apology, it is quoted here :—

"It has been said that to command success one must not only be industrious, but must have an almost ignominious love of detail. This is particularly true of such a 'special' department of medicine as oto-rhino-laryngology, where attention to some little technical detail often makes the difference between hitting and missing the mark. The general practitioner is apt to miss the mark he might otherwise hit owing to the want of attention to the little details which form such an important element in the specialist's stock-in-trade, and thereby to lose confidence, and even interest, in the management of 'special' cases.

"These details are described with almost meticulous minuteness by Dr. Georges Laurens in the work of which this is a translation, and this gives the book a value which is peculiarly its own. The instruction conveyed

in this condensed form is, indeed, to be found scattered in various admirable treatises of British authorship, but in none is there the same detailed formulation of 'What not to do,' and 'What to do,' such as the practitioner particularly requires.

"The carrying out of the instructions is described with that minute clearness for which the French mind seems specially constituted, and with a wealth of illustration which makes mistakes almost impossible."

X-Ray Observations for Foreign Bodies and their Localisation. By Capt. H. C. Gage, A.R.C., O.I.P. London: Wm. Heinmann, Ltd. Price 6s. net.

In a small book of some 83 pages Capt. H. C. Gage treats the subject of *x*-ray localisation very thoroughly. We have read many similar theses, but cannot recollect any better.

All the best methods are accurately described—those of cross-markings—and the various modifications of the Mackenzie Davidson tube-shift plan.

The difficult matter of exact localisation of small foreign bodies in the eye is well detailed. In treating of stereoscopy the author describes a simple method of his own, which is new to us, and has the great advantage of not requiring cumbrous apparatus.

The use of anatomical charts for regional localisation is clearly explained.

The latter portion of the book is concerned with mechanical guides to the extraction of a foreign body—*e.g.*, the compass of Hirtz, Bergonié's vibrator, Sutton's probes and the telephone probe.

The book is amply and well illustrated, but in some of the illustrations the lettering is too small for clearness. The frontispiece shows an admirable piece of localisation and reconstruction of a wound tract.

We can thoroughly commend this small book—written largely on the experience of work at the hospital at Ris Oranges, and originally intended as a chapter in a work which was being compiled for the American Council of National Defence.

The author speaks with experience. Difficulties are not glossed over—they are fairly met.

W. G. H.

The Use of Colloids in Health and Disease. By A. B. Searle. London : Constable & Co. 1920. Pp. 120.

For many years after Graham's fundamental investigations the study of colloids and crystalloids was left entirely in the hands of physicists and physiologists. It gradually became plain that organic tissues are essentially colloidal in nature, and that, in truth, all life processes go on in a colloidal system. Blood, for example, is a typical complex colloidal fluid. The colloidal state is a condition in which matter is in an extremely fine state of subdivision, one which, accordingly, provides a large surface field of action wherein lies an increased potentiality for chemical energy. Colloidal systems are relatively unstable, and are very sensitive to slight changes in their surroundings.

By degrees, the thought dawned upon medical men that certain drugs, when brought into the colloidal state, might exhibit different and more active properties than when in the massive state.

Following this clue, numerous investigations have been carried out within the last ten years upon the therapeutic action of colloidal medicines, and strikingly successful results have been claimed and, we believe, obtained.

The present compact volume is based upon a lecture delivered at the request of the Chadwick Trustees, and forms one of a series of works published under their auspices. The preparation of artificially produced colloids which are stable when introduced into the human

organism is quite recent, and the late Mr. W. Crookes (son of Sir William Crookes) was the first (1910-13) to show how to efficiently prepare stable and isotonic colloidal sols.

Dr. Searle has written this book to popularise among the medical profession the utilisation of colloids, both in health and disease. The book is well worthy of close attention, and we cordially recommend it to our readers as a sane and rational account of a new and important branch of therapeutics and public health.

Some of the modern, practical and valuable methods of purifying sewage depend upon the properties of colloids.

The powerful germicidal action of infinitesimal amounts of certain metallic collosols has been satisfactorily proved by Mr. Crookes and others, and the practical application of this interesting fact has led to astonishingly successful results.

Three remarkable cases, culled from Sir Malcolm Morris's practice, are quoted in detail, and demand serious consideration. They were all cases of severe eruptions of boils and multiple deep abscesses, and the drug was administered intramuscularly (3 c. c.), with immediate and striking satisfactory results.

Colloidal manganese has proved specially valuable among the metallic collosols.. "The rapidity of its action, combined with the saving of dressings, render the use of this form of manganese very attractive in deep-seated coccogenic lesions. In most cases, one injection is sufficient."

ABSTRACTS OF CURRENT LITERATURE.

GENERAL SURGERY.

SURGERY OF THE ABDOMEN.

TRUESDALE, P. E. : *Surgical Treatment of Peptic Ulcer.* "Boston Med. and Surg. Journal." February 5, 1920.

SEVENTY per cent. of all peptic ulcers are in the first stage of the duodenum, and of all gastric ulcers 70 per cent. are on the lesser curvature near the pylorus. Gastro-enterostomy is no longer the ideal operation in the majority of cases. Viewing cases of peptic ulcer as a whole, the majority fall into three main classes :—(*a*) The uncomplicated type; (*b*) ulcer with pyloric obstruction due either to ulceration locally or to muscular and fibrosis hypertrophy; and (*c*) hour-glass stomach. Gastro-enterostomy alone is permanently satisfactory only in cases of definite benign pyloric obstruction. Excision of the ulcer area is essential to a high percentage of cures. The author considers the ideal treatment in suitable cases to be a pylorectomy or partial gastrectomy with the Polya manœuvre of implantation of the gastric stump into the jejunum (end-to-side anastomosis). In a case of low amputation the gastric opening has an average length of 5 to 6 cm. If high, as in hour-glass stomach, the opening lies well above the window in the mesocolon, and stricture has resulted in two reported cases (Mayo). The modification of suturing the jejunum anteriorly to the cut end of the stomach 18 inches from the duodeno-jejunal flexure is approved by the author from a short experience. In this method the anastomotic opening adjoins the lesser curvature, and is no larger than 3 to 5 cm. "Operation for chronic ulcer cannot be applied by rule of thumb, and it is evident that the slowly shifting technique shows the ideal operation not vested in any procedure which leaves the ulcer."

HENRY L. BARNIVILLE.

ARMSTRONG, G. E.: *Ileal and Colonic Stasis.* "Canadian Med. Assoc. Journal." February, 1920.

THIS author reviews the theories of Barclay Smith, Metchnikoff, Lane and Keith, which provide the *rationale* for the operation of colectomy. The assumption of the upright position combined with errors in diet and personal hygiene leads to a dropping of the least firmly-supported part of the intestinal tract—the colon. The development at various points of relative supporting bands may counteract this tendency, but may, on the other hand, if insufficient, produce bends and kinks of the type frequently seen. *X*-ray findings show that ordinary bends *per se* do not necessarily result in delay, nor are tracts of muscular hypertrophy the rule above these points. Keith's theories would seem to find ample support from physiological and pathological research. The fault would appear to lie in the innervation of the gut, and mainly at the "nodal points" of Keith (duodenal, jejuno-ileal, proximal, colic, and distal colic). True absorption begins in the cæco-colon, which allows the passage into the blood-stream of toxins derived either from bacteria or the gut-wall itself, so that the innervation of this region is the important one of the condition of intestinal toxæmia. This portion of the bowel is "biologically younger" than the transverse or descending colon, and more prone to variation. The author regards the operation of resection of the terminal ileum, cæcum, and ascending colon as a "developmental reconstruction" of the colon in definite cases of ileo-colonic stasis and toxæmia. He finds marked improvement in all his cases.

HENRY L. BARNVILLE.

COPE, V. Z.: *The Thigh Rotation or Obturator Test: A new Sign in some Inflammatory Conditions.* "Brit. Jour. Surg." April, 1920.

THE author suggests a test for appendicitis where the appendix is below the pelvic brim, but is not sufficiently low down to be palpated per rectum. Rigidity may be absent in such a case. The surgeon slightly flexes the right thigh to relax the psoas, and then rotates the thigh internally and externally. This puts the obturator internus muscle through a full range of movement, and by dragging upon an inflamed appendix which is adherent to the fascia covering the muscle, causes pain. As this fascia is thick, the test is negative unless the inflammatory adhesion is close. The author believes the test would be of value in diagnosing an obturator hernia.

A. K. HENRY.

VALLIET: *Vicious Circle after Gastroenterostomy.* "Rév. méd. de la Suisse Rom." Dec., 1918.

FOUR possible etiological factors must be considered in the genesis of this condition :—

1. Antiperistaltic fixation of a long loop.
2. Torsion or compression of the efferent loop.
3. Spur formation.
4. Flacidity of stomach or jejunum.

A short-loop posterior gastroenterostomy is the procedure least likely to develop any of these accidents. Once the symptoms of vicious circle declare themselves, there should be no hesitation in carrying out a further corrective operation. Two courses are open : either a second anastomosis may be established between the duodeno-jejunal loop above the gastroenterostomy site and the jejunum below, or a fresh anterior gastroenterostomy with a long loop, if properly performed, will cause disappearance of vicious circle symptoms. The latter procedure has been carried out by the author on four occasions, with three successful results : the one fatality he attributes to too long a delay ensuing prior to the secondary operation. Mobilisation of the duodeno-jejunal loop offers very great technical difficulties owing to the vascular relations. W. DOOLIN.

SURGERY OF THE CHEST.

HENER, G., AND DUNN, G. : *Experimental Pneumectomy.* "Bulletin of the Johns Hopkins Hospital." February, 1920.

IN this paper are described experiments carried out during the past six years on dogs, to show the results of complete removal of one lung. Anæsthesia was produced by the intratracheal method, with a positive pressure apparatus. The results of the experiments as a whole were wonderfully successful, and show that a dog, at least, can live in comfort for an indefinite time after complete removal of one lung. Occlusion of the divided bronchus, which in other experiments has proved the chief stumbling-block to success, was not found by the authors to give rise to any special difficulty. They tried various methods, and found that crushing and the application of a transfixing ligature of silk was quite dependable. In healthy dogs a smear taken from the mucous membrane close to the bifurcation of the trachea was always sterile, and this probably explains the success in closure of the bronchus; the same, however, would not apply to man, where presumably an operation of this character would be performed for

some diseased condition of the lung. The authors also show that there is no effusion of blood into the empty pleura after removal of the lung, and that the space is obliterated with comparative rapidity, by displacement of the heart and the other lung, falling in of the chest wall, and rising of the diaphragm, so that within a fortnight of the operation the empty pleural cavity is to a large extent obliterated except for cleft-like spaces at its upper and lower limits; these, however, may take many months before they finally cease to exist. There are numerous illustrations showing the condition of the closed bronchus at various points after the operation, and also dissections of the chest with the organs hardened *in situ* immediately after death. The authors state that they were unable to determine that the excision of one lung affected the activity or the probable duration of life in dogs. One of the animals became pregnant several months after the operation and gave birth to a litter of seven healthy pups. They remark on the fact that in the dog, through a properly placed intercostal incision, the entire lung can readily be delivered, so that the operation can be performed with comparative ease. These experiments are undoubtedly interesting and form a useful addition to our knowledge, though the results cannot be considered as directly applicable to man.

R. A. Stoney.

Creyx, Dr. : *Certain Clinical Forms of Hydatid Cyst of the Lung.* "Journal de Médecine de Bordeaux." March 25, 1920.

It appears that hydatid disease is fairly common in the south-west of France, especially in the Department of the Landes, and where hydatid disease occurs the lung is the most frequently affected organ after the liver. In most cases the disease simulates tuberculosis of the lung, and it is frequently difficult or impossible to make a differential diagnosis in the early stages. The author points out that when hydatid disease occurs in the lung, it may be accompanied either by no symptoms at all, being found accidentally during a necropsy, or may present varied groups of symptoms, depending to a large extent on the position of the cyst in the lung and the stage of development that it has reached. In many cases, as stated above, the symptoms closely simulate those of phthisis, cough, expectoration, wasting, and perhaps even hæmoptysis. In other cases the symptoms point more to pleural affection, pleural effusion, either simple or purulent. In other cases again the symptoms are those of abscess or gangrene of the lung. In some cases where the cyst attains a large size the main symptoms are due to this size, and are, therefore, those of intra-

thoracic tumour. Here we may find deformity of the chest and signs of compression. The *x*-rays may give very valuable information in making a diagnosis in a doubtful case, and should never be neglected.

R. A. Stoney.

Delbet, P., and Girode, C.: *Treatment of Empyema by Air-tight Drainage and Continuous Aspiration.* "Revue de Chirurgie." 1920. Vol. I.

The authors give details of their method of treating cases of empyema. The steps of the operation are as follows:—(1) Removal of 6 cms. of the 9th rib close to the angle: (2) careful cleaning and drying of the pleural cavity, so as to remove all false membranes; (3) insertion of a flanged rubber drainage tube and air-tight closure of the incision round this; (4) connection of the drainage tube with a vacuum bottle, a negative pressure of 15 cms. of mercury is kept up for as long as the wound remains air-tight. When the negative pressure can no longer be maintained the tube is removed, and the edges of the wound are kept apart by a piece of rubber tissue, and the small cavity rapidly closes. From the commencement respiratory exercises are given to distend the collapsed lung. These consist in the well-recognised method of forcing water from one bottle to another. Notes are given of 16 cases treated by this method, in which the results were for the most part good, the majority of cases being cured in from five to ten weeks. The authors prefer a general anæsthetic, as the cleansing of the pleural cavity is difficult to carry out thoroughly with local anæsthesia.

R. A. Stoney.

SURGERY OF THE NERVOUS SYSTEM.

Leriche, R.: *Effects of Pericarotid Sympathectomy in Man.* "La Presse Méd." May 15, 1920.

Leriche continues in this paper his study of periarterial sympathectomy. The results of removing several centimetres of the sympathetic sheath of the internal carotid are almost the same as those following resection of the superior cervical ganglion—*i.e.*, vaso-dilatation in the carotid areas, enophthalmos, slight ptosis, and miosis. The vaso-dilatation is, however, preceded by a vaso-constriction, less marked than in the limb arteries, and lasting six or seven hours. In one case, with a skull defect, the depressed

scar became level with the surrounding scalp, and the man's severe nocturnal headaches disappeared. In another, after resection of the sympathetic plexus surrounding the superior thyroid artery, he obtained a marked diminution in the goitrous lobe of a thyroid. Leriche believes this operation may replace ganglionectomy.

A. K. Henry.

Dandy, W. E.: *Localisation or Elimination of Cerebral Tumours by Ventriculography.* "Surg. Gyn. Obst." April, 1920. Vol. XXX. No. 4. P. 329.

The accurate localisation of tumours in the cerebral hemispheres is a matter of extreme difficulty, and in many cases the neurological signs give no clue to the position of the growth. A tumour which can be localised with certainty is practically always in one of three positions, in each of which the signs are pathognomonic: (1) Pituitary or third-ventricle tumours show distortion of the sella turcica or characteristic signs of involvement of the optic tracts; (2) precentral or postcentral lesions are indicated by contralateral, motor, or sensory disturbances; (3) neoplasms affecting the motor or sensory speech centres produce the typical deficiencies of speech. Tumours which have been localised in other parts of the brain by neurological methods are small in number.

Accurate localisation is a vital necessity, for without it the case cannot be treated by the one method which can cure or relieve—that is, extirpation. Medical treatment is useless, and by delaying operation renders the latter infinitely more dangerous. The treatment of brain tumours now is where the treatment of appendicitis was thirty years ago. Classical symptoms of compression of the brain in the former correspond to those of general peritonitis in the latter, and the practitioner who waits for such symptoms condemns his patient.

Early recognition and localisation renders extirpation relatively simple. The character and position of many tumours will, of course, preclude the good results obtained in the operative treatment of appendicitis. Gliomata arising very deeply in the brain or in vital parts of it must still be hopeless, but the vast silent areas harbour most of the incipient brain tumours, and from these regions growths can be removed with impunity. Operative procedures are in advance of methods of accurate diagnosis. Results are directly proportional to the stage of growth of the tumour.

Decompression is palliative only, and to judge the results of cerebral surgery by the results of subtemporal decompression is to judge abdominal surgery by the results of peritoneal drainage carried out three days after a perforation.

A tumour of any size situated in either cerebral hemisphere will modify the shape, size, and position of the corresponding lateral ventricle. The changes in the ventricle can be demonstrated radiographically after the injection of air into it. A small opening is made in the skull, and a needle inserted into the ventricle; some cerebro-spinal fluid is withdrawn and air carefully injected. *X*-ray photographs are then taken in different positions, and the shape, size and position of the ventricle determined. Even a bilateral ventricular puncture is a very small procedure compared with an exploratory craniotomy or a decompression, and the results obtained make the puncture much more valuable. In six months 75 cases were submitted to this diagnostic measure without mishap, and the author gives in detail the reports of those in which it was the *sole* means of localisation, neurological methods having failed.

From the account of these cases it can be seen that ventriculography excludes a cerebral tumour when the lesion is situated elsewhere; it locates the tumour precisely when it exists in either cerebral hemisphere. In two cases there was no localising sign by which the position of the tumours was even suspected. In one of these the growth was entirely removed, and the patient is now well; he had been previously submitted to two exploratory craniotomies, but the tumour could not be found. In the second case an inoperable infiltrating glioma was found. In another case no fluid could be withdrawn from the ventricle because the latter was dislocated to the side, but the fact of its dislocation showed that a tumour was present on the opposite side of the brain, from which it was completely removed.

The author concludes that (1) ventriculography is invaluable in the localisation of obscure brain tumours. So-called unlocalisable tumours comprise at present over half of the total number. (2) Practically all brain tumours either directly or indirectly affect some part of the ventricular system. (3) Hydrocephalus is easily demonstrable by ventriculography, and when present usually, though not always, points to the location of the tumour in the posterior cranial fossa. (4) Every effort should be made to localise the tumours before resorting to any operation. (5) Subtemporal decompression is useless and dangerous when hydrocephalus is present—that is, when the growth is in the brain stem or cerebellum. (6) Suboccipital decompression is extremely dangerous when the growth is in the cerebral hemispheres. (7) Ventriculography at once differentiates between cerebral or cerebellar growths. (8) The only cure is extirpation, and the only chance of that lies in *early* localisation. Several *x*-ray photographs are reproduced which illustrate clearly the author's contentions.

ADAMS A. MCCONNELL.

GENITO-URINARY SURGERY.

CAULK, J. R., and FISCHER, R. F.: *An Experimental Study of Ureteral Ligation. Demonstration of late Results to Ureter and Kidney.* "Surg. Gyn. Obst." Vol. XXX. No. 4. P. 343.

IN 1915 the authors published a report of a case in which both ureters had been ligated during a hysterectomy. At the end of eight days the patient became uræmic. A double nephrostomy was done, and immediate recovery resulted. Drainage continued through the nephrostomy tubes for fifty-eight days, when the patient began to pass urine normally, and in another ten days all the urine passed by the bladder. Since then many more cases of this accident have been collected, and the authors present the results of their experimental work on total occlusion of one or both ureters by catgut ligatures.

They used No. 2 plain catgut, and found that it was never absorbed before the end of three weeks, and that it took another two weeks for the lumen of the ureter to re-form, by which time advanced hydronephrosis was present and the function of the kidney practically destroyed, the parenchyma being reduced to a mere shell. When an early nephrostomy was done the kidney suffered no permanent injury, and its function was unimpaired when the ureter became patent.

In cases of double ligation of the ureter they advise immediate double nephrostomy, as in the case quoted above. When single ligation is recognised by the onset of renal pain and swelling they consider that a nephrostomy should be done in preference to any attempt to find and remove the ligature from the ureter in the recently operated pelvis. Nephrostomy is the only means of saving the kidney from destruction.

ADAMS A. MCCONNELL.

LEGUEU, F.: *New Aspect of the Problem of Nephrectomy.* "Jour. d'Urol." Vol. IX. No. 1. P. 1.

THE value of catheterisation of the ureters is as great to-day as it was twenty years ago on its introduction, but new facts have modified the conclusions drawn from this procedure. Catheterisation will usually tell us which kidney is diseased. Apart from the presence of pus, organisms and histological elements, the urine which has the smaller concentration of urea and chlorides comes from the diseased kidney. (The amount of water excreted is no aid in deciding which kidney is affected.) On the other hand,

catheterisation of the ureter is not so valuable in determining the functional capacity of the healthy kidney. The method usually adopted is to leave a catheter in place for two hours, experimental polyuria is produced, and the quantity of water and the amount of urea and chlorides estimated. The concentration and the maximum output of the urea and chlorides are noted.

Albarran's dictum that the sound kidney is the one which adapts itself best to the conditions of experimental polyuria no longer holds good, for in a series of experiments the water excretion from a good kidney has been found defective or alternately poor and normal. One can draw no conclusions from a failure to produce polyuria. As for the concentration of urea and chlorides, the results obtained vary within wide limits and one cannot base a diagnosis on them. The same may be said of the total output of these substances and of their maximum output—*i.e.*, their highest concentration during two hours multiplied by the amount of water excreted in one half hour of this period.

When the maximum output is from 30 to 35 grammes one is relatively sure that the renal function is good, but absolute certainty is not reached.

In order to determine the functional capacity of a kidney one must know what passes to it as well as what comes away from it.

Ambard's constant[a] expresses the relationship between the amount of urea in the blood and in the urine.

The author now corrects and controls the results of catheterisation by the constant, and sometimes unexpected contradictions are evident. Sometimes a kidney which is apparently of good functional capacity as judged by catheterisation is found in a patient with a constant approaching or exceeding 0.100. Whilst inversely the constant is often normal (0.062) when chemical analysis of the ureteral specimens strongly suggests bilateral disease. Two illustrative cases are reported. Analysis of urine from one kidney gives no more information on the functional

[a] $$\left[\frac{Ur.}{\sqrt{D} \times \frac{10}{P} \times \sqrt{\frac{C}{25}}} = K \quad \text{(constant)}\right.$$

where $Ur.$ = grammes per litre of blood
D = grammes of urea excreted in 24 hours
P = weight of individual in kilogrammes.
C = grammes of urea per litre of urine.

The formula is usually simplified by the omission of the patient's weight, and reads:—

$$\left.\frac{Ur.}{\sqrt{D} \times \sqrt{\frac{C}{25}}} = K.\right]$$

capacity of that organ than the analysis of a 24-hours' specimen of urine will give of the total renal function.

Since it is necessary to check the results of catheterisation with the constant, is it always necessary to catheterise the ureters provided that one knows which kidney is diseased? Obviously not, for if there is gross disease in one kidney—a large calculus or an enormous hydronephrosis or a pyonephrosis, tuberculous or otherwise—the figure of the constant will be the index of the functional capacity of the other kidney. In a case of tuberculosis in which it is impossible to catheterise the ureters because of extensive vesical involvement or excessive sensitiveness, and where there is no indication of which kidney is diseased, the constant alone must settle the question of nephrectomy. If it is unfavourable, medical treatment is indicated, for the disease is bilateral. A favourable figure indicates that one kidney is sound. Bilateral exposure of the kidneys is performed, and the diseased organ removed. In such a case of advanced tuberculosis there is no difficulty in determining at operation whether a kidney is diseased or not.

The author gives his results in 437 consecutive cases, some of them based on data obtained from catheterisation alone and some of them on the constant. The results in the two classes are very similar, but they show that in certain cases all the data for nephrectomy may be gained from the constant alone. When the constant gives a figure below 0.100 the disease is unilateral, and the function of the supposedly sound kidney is such that nephrectomy can be confidently recommended, the localisation of the lesion having been determined. When the constant is above 0.120 the decision is a very delicate one, the constant is determined every day, and care is taken not to commit oneself to the statement that at one figure operation is possible, and at another impossible. The whole significance of the constant in disease of the kidney is not yet known, and such rapid modifications take place that definite conclusions cannot be drawn. The higher the constant the more danger there is, and at 0.140 it is not perhaps impossible to effect a cure, but it is infinitely more hazardous than when the figure is lower. In this connection the distribution of the lesions is of great importance. The same high figure may indicate total destruction of one kidney which is an indication for nephrectomy, for the other kidney will do exactly the same amount of work after as before; or advanced disease in both when nephrectomy is out of the question, for the excess of work thrown on the remaining organ will be more than it can undertake.

Catheterisation is of the greatest importance in determining this distribution of the lesions, and at no time can clinical judgment be dispensed with.

ADAMS A. MCCONNELL.

MARION, G.: *On the Significance of Chronic Vesiculitis in Prostatics.* "Jour. d'Urol." Vol. IX. No. 1. P. 11.

THE author gives in detail the histories of three cases of cancer of the prostate in which the seminal vesicles were distended and thickened, but were not involved in the malignant process. Case I., aged fifty-eight, had severe perineal pain for three or four months and 250 grammes of residual urine. The history suggested prostatic enlargement, but rectal examination revealed a hard mass, fairly uniform, somewhat granular and prolonged upwards on each side by other swellings of like consistency. Below it corresponded exactly to the prostate, and was not of great size. Cancer of the prostate was considered, but the absence of board-like consistency, and the fact that there was no induration round the prostate, was not in harmony with this diagnosis. As the patient was a syphilitic a diagnosis of syphilis of the prostate was tentatively made and medical treatment advised. After two months the residual urine had increased to 300 grammes, and the swelling had diminished to half its original size. This reduction in size confirmed the diagnosis of syphilis. But in spite of treatment, the symptoms got worse, and operation was performed by the perineal route, the prostate, both seminal vesicles, and the neck of the bladder being removed with difficulty in one piece. Recovery was uneventful. Examination of the specimen showed a small cancer of the prostate and two distended vesicles, parts of which were filled with slightly hæmorrhagic fluid, and parts with purulent exudation. Each cavity had an abnormally thick wall. Case II., aged sixty-one, got an attack of acute retention in June, 1915. Catheterisation relieved him, but hæmaturia followed, and lasted for four days. A diagnosis of prostatic hypertrophy was made, and he was treated by catheterisation and lavage for six months. Another surgeon then saw him and made a diagnosis of cancer of the prostate. Three years later he consulted another urologist, who treated his supposed hypertrophied prostate by dilatation. Nothing but harm resulted, and an abscess of the right testicle developed. This was opened, and healed rapidly, to be followed in a few months by a double epididymitis. Still another genito-urinary surgeon made a diagnosis of tuberculosis, and advised medical treatment. Great frequency and pain were now the prominent symptoms. The author saw the case some months later, and made a diagnosis of chronic prostatitis with vesiculitis. The whole region of the prostate was indurated, and both seminal vesicles were thickened, the right more than the left. Tuberculosis was excluded by the rapid healing of the former testicular abscess, and cancer by the probability that a new growth would have spread more widely in four years. Perineal prostatectomy was done, and both seminal vesicles removed. An adenoma of

the prostate with cancerous development was found. Scar tissue surrounded the ejaculatory ducts, and caused obstruction to them. Case III., aged sixty-six, suffered from severe pain and frequency and dysuria of some months' duration. A diagnosis of prostatic hypertrophy, associated with distension of the seminal vesicles was made. Operation showed cancer superimposed on an adenomatous growth. The vesicles showed no malignant involvement.

Three prostatic cases diagnosed variously as syphilitic, adenomatous, and inflammatory, all associated with vesiculitis, all proved to be cancer.

Classical descriptions of cancer of the prostate include the statement that there is a bilateral prolongation of the growth due to malignant induration of the vesicles. The question arises whether this finding on rectal palpation does not indicate vesicles distended rather than involved in the cancerous process. This is an extremely important question, for if the vesicles are cancerous operation is futile, whilst, if simply dilated consequent to involvment or invasion of the ejaculatory ducts in the substance of the prostate, operation is indicated, other conditions being favourable. The discovery of vesicular dilatation has another important significance, for when present in a patient with prostatic symptoms, in the light of these three cases, it strongly suggests malignancy. Seminal vesiculitis is often present in cases of chronic prostatitis, but the patients have no prostatism, and in patients with ordinary hypertrophy swollen vesicles have not been noted.

The author draws the following conclusions :—

(1) The discovery of painful vesicular enlargement ought to suggest the idea of cancer, whatever be the type of prostatic lesion.

(2) This enlargement of the vesicle should not be interpreted to mean infiltration of the vesicle with cancer.

(3) It is not a contraindication to removal of the prostate when this is possible.

(4) Removal of the vesicles does not appear to influence the prognosis of prostatectomy.

Adams A. McConnell.

GENERAL SURGERY.

Stassen and Voncken : *The Curative Value of Serum in Tetanus.* "Archiv. méd. Belg." Sept., 1919. Vol. IX. P. 255.

Whilst the prophylactic value of antitetanic serum is fully appreciated, its position as a curative agent still remains open to study. For this reason the authors publish their case, with observations.

A Belgian soldier, who had sustained a cutaneous injury to the thumb, developed a local cellulitis. No prophylactic injection

had been made. On the seventeenth day from the injury he developed an intense trismus of rapid onset. Antitetanic serum (Pasteur) was at once administered, 100 c.c. intrathecally, 100 c.c. subcutaneously, and the wound was completely excised. During the two following weeks he went through a very severe succession of tetanic seizures, accompanied by pyrexia, with loss of control of both bladder and rectum. Chloroform narcosis was necessary for each intrathecal injection: notwithstanding a well-marked urticarial reaction, serum therapy was persisted with, 720 c.c. in all being administered. The patient left hospital convalescent on the thirty-eighth day.

The authors emphasise the value of administration by the intrathecal route, as a curative agent: subcutaneous injections should be employed at the same time, with a view to the formation of a reserve store of tetanic antibodies within the system.

Notwithstanding the appearance of various anaphylactic phenomena, the administration of serum must be persisted in, and very large doses given, if one is to have any hope of cure in cases of established tetanus.

W. Doolin.

Bergstrand, H.: *Studies in the Anatomy of the Normal Parathyroid Glands.* "Nord. med. Arkiv." Vol. LIII. Fasc. I. Pp. 791-856. March, 1920.

Since the first description of these structures by Sandström (1880), a host of investigators have published widely varying accounts of their researches. Bergstrand has, during the past few years, undertaken a series of observations on some 200 subjects, in whom the parathyroid, thyroid, and thymus tissue was normal—*i.e.*, unchanged by disease. The results of his numerous observations can be summarised as follows:—

The normal number of parathyroid glands is four: in only the rarest instances are there fewer present. They lie in the cellulofatty tissue between the thyroid gland and the œsophagus, symmetrically grouped in pairs: the upper pair may be easily found by tracing up the inferior thyroid artery to its division just before its entry into the gland: the lower pair are more difficult to isolate, but with care can always be found in immediate relation to the apex of the thymus lobe on either side. Reliable measurements of the actual quantity of parenchymatous parathyroid tissue are at present unattainable. Histologically, the parathyroid structure is best demonstrated with Bielschowski staining. The cells lie in groups, each group surrounded by a network of capillaries, the whole formation being capable of designation as a "parathyroid follicle." Occasionally these follicles are grouped into

regular tubules with well-defined lumina. In the infant, there is little interstitial tissue between the follicles. This supporting tissue develops in the course of years, and through its development originate the different gland types described by various observers. This interfollicular tissue is rich in fat cells.

With the Bielschowski stain, the author was enabled to demonstrate a very fine latticework of supporting connective tissue (Gitterfaserwetz) embracing the cells and their capillaries. This has been hitherto unrecognised.

The main cell is the only one cellular type of true functional value to be found in the parathyroid. The so-called Welsh's cell is a degeneration product, as it is constantly to be found in the senile gland and in tumours. Dissimilar appearances of the true parathyroid cell may be accounted for as due to different stages of secretory activity. It has a homogenous protoplasm, stains well with acids, and is rich in fat granules. Colloid material present in the sections may arise either as a true secretion or as a produce of the breaking down Welsh cell. The normal parathyroid secretion appears as " eosin red lines " in the stroma. Certain strongly granular cells are to be observed in the stroma which Bergstrand considers identical with the pigment cells first described in the parathyroids by Erdheim.

W. Doolin.

Bonnet, P. : *Systematic Preservation of Mutilated Fingers with a View to Autoplasty.* " Gaz. des Hôpitaux." April 27, 1920.

The author revives a method described by Charles of Lille in 1891, which he terms *cheiroplastie dactylienne*. Fingers hopelessly mutilated from the point of view of function are deliberately preserved; their phalanges are resected, and their soft parts are used as pedicled flaps to graft neighbouring defects after adequate mechanical and chemical sterilisation has been effected.

A. K. Henry.

ROYAL ACADEMY OF MEDICINE IN IRELAND.

President—Sir John Moore, M.D.Dubl., F.R.C.P.I.
Secretary—J. A. Scott, M.D., F.R.C.S.I.

SECTION OF OBSTETRICS.

President—E. H. Tweedy, M.D.
Secretary—T. Neill, M.D.

Friday, February 20, 1920.

Tuberculosis of the Vulva.

Dr. Solomons read a paper on a case of Lupus Tumidus of the Vulva. (See *Dublin Journal*, May, 1920.)

Dr. Ashe said that when he saw the case first he thought the condition was syphilitic in origin, and had a Wassermann done which was negative. There were very few recorded cases, the first being described by Matthews Duncan as lupus of the vulva.

Dr. Crofton took exception to the statement that it was impossible to make a diagnosis without the aid of a microscope. Why did he not use tuberculin which would have cured the case?

Dr. Rowlette said that it was difficult to prove that an infection was purely local, and it was hard to believe that the primary site of disease was in the vulva and that it was confined to the vulva, as glands were nearly always involved. As an alternative treatment tuberculin was very useful in this class of case which showed only local manifestations. He had seen only one case of tuberculosis of the vulva (Dr. Tweedy's case) which was of the lupoid variety.

Dr. Sheill thought that diagnosis by means of the microscope had proved a failure in this case, as no tubercles were found in the first piece which was removed for examination. He would like to hear the history of the case with regard to tuberculosis during the next few years, more especially with regard to the tubes.

Dr. Kirkpatrick said the diagnosis was not made till after the vulva had been removed. The first report was suggestive of tuberculosis, but there was no positive proof, and treatment was carried out without a definite diagnosis having been made.

Treatment of a more conservative nature could have been undertaken—*e.g.*, Finsen light or *x*-rays. Lupus of the face is very amenable to treatment, and gives excellent results with either of these methods. It would have been expensive and troublesome, no doubt, but it was not correct to say there was only one treatment—*e.g.*, excision—especially in a case where the preservation of the parts was of some importance.

If any progress was to be made, this idea of excision which was urged by Watson Cheyne would have to be given up—there was always a danger of recurrence, and he fully expected that the disease would reappear at the site of removal unless further treatment was undertaken for its cure.

The President (Dr. Tweedy) was interested to see how physicians and gynæcologists differed in their attitude to the pathologist. He regarded the tuberculin test as absolutely valueless in a case of tuberculosis of the vulva. Ninety per cent. of people had a focus of tubercular infection somewhere about them, especially those who drank Dublin milk. This test told only that there has been tubercle in the body, not whereabouts in the body. It was just as dangerous to apply the tuberculin test to the eye or skin as to remove the vulva. He had never diagnosed this condition, which was usually mistaken for a syphilide or malignant disease. Tuberculosis was very common in the tubes and endometrium, but it worked down and not up. He thought treatment by Finsen light, *x*-rays or tuberculin would be of value, especially now that the hard fibrous masses of the vulva had been removed.

Dr. Solomons, replying, said that the patient had had the condition for ten years, and it had not improved under palliative measures. The appearances of the first slide were typical of tuberculosis, though tubercles had not been found. The diagnosis was merely confirmed by finding the tubercles afterwards. No evidences of tubercular infection were found elsewhere in the patient. A careful bimanual examination had been made, and the tubes appeared quite healthy, but he would not say absolutely definitely that there was no tuberculosis of the tubes. He hoped to get the history of the case subsequent to operation. After operation there was not much distortion of the parts, and the woman was left with a healthy mind and body.

Tubal Sterility.

The President showed his instruments for passing catgut through the tube—a fine stiff needle with a blunt point should be used. It should pass first through the ovary, where the catgut should be knotted, then through the tube, and then through the mucous membrane. Mucous membrane should be sewn to mucous membrane.

In every case of sterility the tubes, even though apparently normal, should be tested for permeability by the air test. The impervious part should be cut away. It had been suggested that the short tube would prevent pregnancy, but he had seen pregnancies in women whose tubes were certainly not more than one and a half inches long.

Dr. Solomons said the paper dealt not so much with tubal sterility as with sterility in women with long tubes. He would feel very diffident about resecting tubes just because they were long. He blew them up with air when there was a kink and resected them not on account of their length but because of disease. In excision for length did Dr. Tweedy get the excised part examined microscopically?

The removal of the uterine ends of both tubes in these cases was a very big undertaking in view of the difference in bore of the parts to be brought into apposition, that of the smaller end being only one-twenty-fifth of an inch.

The instruments, he thought, would prove very useful. When resecting a tube he did not use forceps, but had special needles, the ends of the tubes being held, one by him and one by an assistant, in an end-to-end anastomosis. But Dr. Tweedy was dealing with resection of the uterine ends of the tubes.

This question of sterility embraced all the pathological conditions in the tube. Since October, 1919, when he read the opening address in the Biological Society, he had seen many cases to prove that the tubes were usually at fault—many without gross lesions. It was difficult to know what to do in these cases. If the abdominal end was diseased, a new ostium should be made and the fimbriated ends removed. If the middle part, an end-to-end anastomosis for which he used a long straight needle, resecting the tube when catgut had been passed through the lumen. In cases of disease of the uterine end, the prognosis was very bad, especially if the condition was bilateral.

He wanted to know what part of the ovary the catgut passed through before going through the tube, and if this step were necessary. He thought any ova in the neighbourhood should find their way into the tube without help.

Dr. Sheill said that the first thing to prove was that a woman was really sterile, or successes might be claimed which were not earned. He was not sure that dilatation of the tubes with air was a sufficient test of the condition of the tubes. The only proof of sterility was a microscopic examination of the parts removed. With regard to the passage of the needle, if a false passage were made at the uterine end, it was possible that the epithelium would follow this false passage, especially if chromicized gut were used instead of ordinary six-day catgut.

The Master of the Rotunda said that the getting into apposition of the wide and narrow parts of the tube was the great difficulty.

Dr. Tweedy, replying, said he hoped that by next year the technique of the operation would be greatly improved. Dr. Solomons dealt with the long tube. What he said was, not that a long tube should be resected, but that a long tube which was obstructed, as most long ones were, should be resected. He had observed the greatest difference in the calibre of tubes in different individuals. As regarded the microscope test serial sections would have to be taken of the one and a quarter inches of tube removed and the obstruction might only be $\frac{1}{100}$ of a millimetre. He thought the method employed by Dr. Solomons would lead to tubal pregnancy, as it had done in one case already, and also in one of his own cases when this method was employed. He used to agree with Dr. Solomons that this was due to inflammation, but now believed that the lack of epithelial continuity was at fault. Blair Bell had a case of pregnancy after stitching the fimbriated extremity to the cornu of the uterus.

SECTION OF MEDICINE.

President—G. Peacocke, M.D.
Secretary—G. E. Nesbitt, M.D.

Friday, February 27, 1920.

Senile Urticaria Pigmentosa.

Dr. Drummond showed a case of the above, of fifteen years' duration, in a man of sixty-eight years of age, who came to him for treatment for his skin. The condition was well seen on the arms and trunk, and consisted of closely-set macules and plaques, the latter up to two shillings in size, pink, red to deep violet, disappearing on pressure. The duration of the individual lesions varied from half an hour up to several months. Factitious urticaria was well marked, itching very slight. As the disease is usually limited to very early life this case was not at first thought to be urticaria, the diagnosis lying between that and the erythemas. The case was examined by Dr. Beatty, who had a similar case in an adult in 1919. Sections of skin were examined by Dr. O'Kelly, who reported the presence of mast cells in large numbers. The presence of excessive numbers in the skin was considered by Brock, Unna of Hamburg, and Gilchrist of Johns Hopkins Hospital as pathognomonic.

This patient also suffered from auricular fibrillation, and was treated by Dr. Nesbitt, who showed slides of tracings taken to

demonstrate the condition, also a tracing from a case of mitral stenosis, in which the *a*—*c* interval was slightly prolonged ($\frac{1}{10}$ - $\frac{1}{5}$ secs.) for comparison. The radial pulse was very irregular, the apex tracing showing the same condition, the ventricular wave being down instead of up, as it was taken from the right ventricle instead of the left owing to the emphysematous condition of the left lung. Jugular pulse showed no sign of an *a* wave in front of the *c* wave. The fluttering condition of the auricle was well shown.

Dr. Wallace Beatty stated that he saw a similar skin condition in 1919 in a healthy man of thirty-two, the trunk and extremities being affected; duration ten years. Condition first noticed on the upper part of the chest, gradually spreading—the face, hands and feet being spared. There was no irritation. The majority of spots were brownish in colour and not altered by pressure. At first sight one would think of a syphilide, but the history and duration negatived it. According to Darier it usually occurred in infants, and tends to disappear in eight to ten years. In 1905, at the French Society of Dermatology, Dr. Beatty stated that the affection might begin in adult life, and was often a family condition. He then showed slides of microscopic sections of skin showing numerous mast cells, also of photographs of the condition in adults and in an infant.

Dr. Walter Smith objected to the name senile urticaria pigmentosa.

Dr. O'Kelly stated that on examining the sections he had never seen such large numbers of mast cells packed with basophile granules. There was no special distribution of the cells.

Dr. Crofton suggested that cultures should be made from fluid obtained by blistering affected areas.

Patient with Pituitary Tumour.

Dr. Maxwell.—The patient, a woman aged fifty-eight, was seen on 23rd January on account of difficulty in reading. There was a history of two years' headache and dizziness. She was found to be suffering from bitemporal hemianopsia. The turbinated bones on the right side were very œdematous.

Dr. Purser stated that he then saw the case. There was bad headache, but not severe enough to make one suspect intracranial growth. She vomited once or twice, but there were really no signs of dyspituatism. Amenorrheic signs were of no value as the patient was past the menopause. Fat was slightly increased, and there was some loss of hair, but nothing else except the condition of the eyes.

The tumour of the pituitary was well shown by *x*-ray photograph. He asked for views as to operative treatment.

Dr. Hayes said that ten years ago Dr. Werner showed a case of

this sort who had bitemporal hemianopsia. It was recorded in the *Transactions of the Academy*.

In a recent issue of the *American Journal of Röentgenology* the treatment of this condition by very hard rays is advocated.

Dr. Spears showed a case of paralysis in a woman of twenty-eight. She was admitted to the Adelaide Hospital complaining of paralysis of the left arm and leg. She was married six years and had six children, four dead and two alive. She was told she could not nurse, so did not. Always healthy and periods normal. In February, 1919, she was delivered of a male child, normal and healthy. The placenta was torn. After its removal she had a hæmorrhage, after which she was unable to move her left arm or leg. A fortnight later she was sent to Monkstown Hospital, where she remained for nine months, during which time she had electrical and massage treatment and was greatly improved. She had severe pain on the left side of her head and face; the left side of her face was "crooked," and all food dropped out of her mouth on the left side. On examination the arm was held in a position of tetany, except that the interphalangeal joints were held in a flexed instead of an extended position. The wrist was drawn to the radial instead of to the ulnar side.

Sensations normal except touch. After slight massage, some movements of the arm were produced. Fingers could be extended by passive movements.

Leg—as arm.

Reflexes—Left knee jerk exaggerated, right sluggish, ankle clonus marked in left foot. Babinski?

Abdominal reflexes absent.

Wasting of calf muscles of left leg; periarticular painless swelling of both knee joints.

Eyes normal; Wassermann negative.

Electrical reactions—All muscles of arm and leg responded to faradic and galvanic currents.

Dr. Purser said there was probably a functional element in the case, aggravated by not having been taken in hand earlier, but he thought the condition was organic in origin, as the gait was characteristic of hemiplegia. The tendon reflexes were increased. The origin was undoubtedly vascular, but whether due to hæmorrhage or thrombosis he could not say.

Dr. Drury thought it was probably due to thrombosis owing to slow and scanty circulation through the brain. He knew of two other cases following pregnancy in previously healthy women. In one case the condition of the arm and leg was identical with Dr. Spear's case, but as the hemiplegia was on the right side there was also aphasia.

Dr. Nesbitt asked if the cerebro-spinal fluid gave a negative Wassermann?

Dr. Spears, in reply, said he thought the case was one of mixed paralysis—that the arm was functional and the leg organic. He had not examined the cerebro-spinal fluid: he thought Dr. Drury's theory of origin was probably correct.

Dr. Spears then showed a case of mixed sensory aphasia which had been handed over to him by Dr. Bewley.

The patient, an unmarried woman aged fifty, was admitted to the Adelaide Hospital on January 29th, 1920, having been operated on in 1919 for malignant uterine disease. She felt well on the 27th January, but had a stroke that day, and found herself on the floor on the morning of the 28th. As she lived alone, no information about the nature of the stroke is obtainable. She was unable to speak on the 28th.

OBITUARY.

ALLEN, WILLIAM. Died April, 1920. Born 1857. Educated Queen's College, Galway; M.D., M.Ch., L.M., 1877, R.U.I.; formerly Senior Demonstrator of Anatomy, University of Glasgow; Medical Superintendent of Hospital for Infectious Diseases, Leadgate, and M. O. H. Leadgate Urban District Council, Yorkshire. Died at Shotley Bridge, Durham.

BALL, ROBERT GORDON. Died February 3, 1920. Educated in Trinity College, Dublin; B.A., M.B., B.Ch., B.A.O., 1911, Dub.; Medical Officer, West African Medical Staff, Gold Coast; Lieutenant, R.A.M.C., August 14, 1917; Captain, 1918; served in the Cameroons. Died in Dublin.

BENNETT, WILLIAM. Died April 17, 1920. Born in 1845. Educated at the Royal College of Surgeons, Ireland; L.R.C.S.I., 1866; L.A.H. Dub., 1867; L.R.C.P. Edin., 1868; late Medical Officer of Clonakilty Dispensary. Died at Clonakilty, Co. Cork.

COLLIS, ROBERT WILLIAM. Died January 14, 1920. Born 1856. Educated at Royal College of Surgeons, Ireland; L.R.C.S.I., 1877; L.K.Q.C.P.I., 1878; Medical Officer, Sandown and Shanklin Isolation Hospital. Died at Sandown, Isle of Wight.

CREAN, JOHN JOSEPH. Died May 2, 1920. Born November 5th, 1842. Educated at Cecilia Street School of Medicine, Dublin; L.R.C.S.I., 1868; L., 1868; M.R.C.P.I., 1880; Assistant-Surgeon Staff, October 4th, 1868; Surgeon to 6th Regiment of Foot, 1870; Staff-Surgeon, December, 1871; Surgeon-Major, 1881; Lt.-Colonel, May, 1889; retired February, 1891; served in the Soudan 1885.

FRANKS, KENDAL MATHEW ST. JOHN. Died May 1, 1920. Born at Thomastown, Co. Kilkenny, February 8, 1851. Educated at Trinity College, Dublin; Sch., 1872; B.A., 1873; M.B., 1875; M.D., 1876; L., 1875; F.R.C.S.I., 1878; late Demonstrator of Anatomy in Royal College of Surgeons Schools, and Surgeon to the Adelaide Hospital; Vice-President, College of Surgeons, 1896; Temporary Consulting Surgeon during the Boer War; created C.B. 1900; Knighted 1904. Died at Johannesburg.

KELLEHER, THOMAS ALOYSIUS. Died March 30, 1920. Born 1873. Educated at Queen's College, Cork; M.B., B.Ch., B.A.O., 1897, R.U.I.; L.A.H. Dub., 1898; formerly House Surgeon, County and City Infirmary, Waterford.

MANGAN, BARTHOLOMEW. Died March 29, 1920. Born 1859. Educated at Queen's College, Cork; M.D., M.Ch., 1883; M.A.O., 1885, R.U.I.; Physician, Killarney Fever Hospital.

MORROW, RINGLAND. Died May 3, 1920. Born 1873. Educated at Queen's College, Belfast; M.B., B.Ch., B.A.O., 1896, R.U.I. Died at Newton Abbot, Devon.

SPELMAN, ANDREW PATRICK. Died April, 1920. Born 1894. Educated at University College, Dublin; M.B., B.Ch., B.A.O., 1916, N.U.I. Killed as the result of a motor accident at Dunmore, Co. Galway.

LECTURES IN OTOLOGY.

Two lectures on Pyogenic Diseases of the Middle Ear will be delivered by Sir Robert H. Woods, M.Ch., M.P., Honorary Professor of Laryngology and Otology, Trinity College, in the Theatre School of Pathology, Trinity College, on Friday, June 4th, and on Monday, June 7th, at 5 p.m. on each date. The lectures will be illustrated by lantern slides. Qualified medical men and medical students are invited to attend.

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ORIGINAL COMMUNICATIONS

ACUTE PNEUMOCOCCAL LOBAR PNEUMONIA.

By HENRY F. MOORE, M.D.

The importance of the treatment of acute lobar pneumonia from the viewpoint of the general practitioner cannot be overestimated. In great cities the mortality from this disease ranks second to that of pulmonary tuberculosis. Any advance, therefore, in the treatment of a disease with such a heavy death-roll is of the first importance. During the last fifteen years, lobar pneumonia has been subjected to much study, especially from the etiological point of view. These studies were initiated by Neufield (1) in Germany, and carried out in America by the staff of the Hospital of the Rockefeller Institute for Medical Research, New York (2).

The painstaking studies of the American workers are mainly responsible for what has already been accomplished in the etiological diagnosis and specific treatment of lobar pneumonia.

Over 94 per cent. of cases of acute lobar pneumonia are

due to the *Diplococcus pneumoniæ;* the remainder are due to various organisms occurring either singly or in combination, such as *Bacillus influenzæ* (so-called, Pfeiffer), streptococci, staphylococci and Friedländer's bacillus. The studies referred to above have had to do mainly with that form of lobar pneumonia, due to pneumococcus (*Diplococcus pneumoniæ*), which is indistinguishable clinically, with any degree of accuracy, from lobar pneumonia due to other micro-organisms. These studies have demonstrated that pneumococci can be divided into four types or groups, each type being absolutely distinct serologically from the others. Therefore, from an etiological viewpoint, we should rather speak of the acute pneumococcal pneumonias; and in order to make plain the specific treatment of the disease in so far as this is useful at the present time, it will be necessary to discuss in some detail the bacteriological and laboratory diagnosis of the four types of pneumococci.

A successful specific serum treatment has been elaborated for one type of pneumococcal pneumonia (Type I.). Serum therapy under present conditions is probably valueless in the other three types. Hence the importance of the methods in use for discovering to which type the pneumococcus causing each case of lobar pneumonia belongs. The newer laboratory methods also give information of considerable prognostic value.

Pneumococci.—Pneumococcus is typically a Gram positive, lanceolate diplococcus; it is non-motile and does not form spores. When growing in animal exudates it possesses a capsule which may be demonstrated by the Hiss capsule stain. In broth (reaction 0.3 to 0.5 per cent. acid to phenolphthalein) it grows diffusely, in chains or pairs depending upon the age of the culture, and shows a slight sedimentation.[a] On agar enriched with blood it grows

[a] It has been shown (Dernby and Avery, J. Exp. Med., 1918, XXVII., 345; Avery and Cullen, J. Exp. Med., XXX., 1919, 359) that the best method of adjusting the reaction of broth for the growth of pneumococcus is by means of the hydrogen ion concentration (P_H). The optimum P_H is 7.8. The method will be found in Special Report Series, No. 35, Medical Research Committee, National Health Insurance, 1919.

readily, the colony being small, translucent, moist and surrounded by a brown-green zone. It grows best at 37° C., and it ferments inulin. When to 0.2 c.c. ox-bile is added 0.8 c.c. of a culture of pneumococcus the pneumococcus goes into solution on incubation for about half an hour at 37° C., the culture becoming clear; 10 per cent. sodium taurocholate or glycocholate may also be used; this test distinguishes pneumococcus from streptococcus, the latter not being bile-soluble. This bile solubility is a distinctive biological character of pneumococcus. Heat killed pneumococci are not bile soluble, and the presence of albuminous fluids inhibits the reaction.

Serological Groups of Pneumococci.—Dochez and Gillespie (3) have shown that the pneumococci may be classified into four distinct serological types or groups—Types I, II, III *(Pneumococcus mucosus)* and IV. When an antiserum prepared against any pneumococcus of Type I is mixed with a culture of any pneumococcus of the same type, well-marked agglutination results on inoculation, but there is no agglutination upon mixture of a Type I antiserum and pneumococci belonging to any of the other types—namely, Types II, III, and IV. The same is true, *mutatis mutandis*, of Type II antiserum in the case of pneumococcus Type II and of Type III antiserum in the case of pneumococcus Type III. In other words, a Type II antiserum will only agglutinate Type II pneumococcus and not Type I, III, or IV, &c.

Again, an immune serum produced against Type I pneumococcus, when injected into a white mouse, will protect the animal against many thousand lethal doses of a culture of a virulent Type I pneumococcus injected simultaneously, or even if the serum is given some hours after the micro-organisms have been injected. 0.2 c.c. of a good antipneumococcus serum Type I will regularly protect a mouse against one million lethal doses of Type I. pneumococcus if both serum and culture are injected simultaneously into the peritoneal cavity. This protective or curative power is evident only when the anti-pneumococcus serum is of the *same type* as the infecting pneumococcus;

for example, Type I antiserum protects against many thousand lethal doses of Type I pneumococcus, and Type II antiserum protects against many thousand lethal doses of Type II pneumococcus, but Type I antiserum gives no protection to the animal against Type II or Type III pneumococcus. In other words, to protect an animal against pneumococcus infection, an antiserum must be used homologous with the type of the infecting pneumococcus. The protective power of antipneumococcus serum Type I is such that when culture of pneumococcus Type I and serum are injected simultaneously into the peritoneal cavity of a white mouse, 0.2 c.c. of the serum will protect the mouse against 0.1 c.c. of a virulent sixteen-hour broth culture (minimum lethal dose, 0.0000001 c.c.).

The potency of antipneumococcus serum Type II against infection with Type II pneumococcus, as judged by its protective power in white mice, is several times less than that of Type I serum against Type I pneumococcus, and the potency of Type III antiserum against Type III pneumococcus is still less. In the treatment of acute lobar pneumonia with specific antipneumococcus serum, brilliant results have been obtained in the Hospital of the Rockefeller Institute for Medical Research, New York, and elsewhere, by the use of Type I antiserum in lobar pneumonia due to Type I pneumococcus, but serum treatment of lobar pneumonia due to Type II or Type III pneumococcus with the type homologous antiserum has been, up to the present, apparently a failure. Hence, in the practical application of this form of therapy in lobar pneumonia, the first step is the determination, from the sputum (or otherwise, as will be described below) of the causative micro-organism. If this is a pneumococcus, the next step is the determination of the *type* of pneumococcus. If the pneumococcus belongs to Type I, then serum treatment may be instituted. If the causative micro-organism is a pneumococcus belonging to Type II, III, or IV, or not a pneumococcus, serum treatment at present cannot be considered helpful. The protective power of Type I antipneumococcus serum in white mice against the type homologous pneumococcus and the absence of such protective

power of heterologous antiserum (Type II) is shown in the following experiment (Table I) :—

TABLE I.

PROTECTION OF MICE OF 18 TO 20 GMS. WEIGHT AGAINST VIRULENT PNEUMOCOCCUS BROTH CULTURE 18 HOURS OLD, BY ANTIPNEUMOCOCCUS SERUM; SIMULTANEOUS INJECTION OF ANTISERUM AND CULTURE INTRAPERITONEALLY.

—	Pneumococcus Type I. 18-hour broth culture c.c.	Anti-pneumococcus Serum Type I. c.c.	Anti-pneumococcus Serum Type II. c.c.	Result
Type homologous antiserum	0.1	0.2	—	S
	0.01	0.2	—	S
	0.001	0.2	—	S
	0.0001	0.2	—	S
	0.00001	0.2	—	S
	0.000001	0.2	—	S
Controls of Virulence	0.00001	—	—	+28 hrs.
	0.000001	—	—	+20 hrs.
	0.0000001	—	—	+24 hrs.
Type heterologous antiserum	0.0001	—	0.2	+24 hrs.
	0.00001	—	0.2	+20 hrs.
	0.000001	—	0.2	+20 hrs.

The controls of virulence each received 0.2 c.c. normal serum intraperitoneally.
+ = Death.
S = Survival for 5 days or more.

Group IV includes pneumococci which are in no way affected by antipneumococcus serum Types I, II, and III. It is divided by Miss Olmstead into eight sub-groups (4); each of the sub-groups is made up of stains that show cross-agglutination with one another but not with members of other sub-groups of Group IV. A polyvalent Group IV antiserum is not generally available, but there should not be much difficulty in its production. One would expect it to be useful therapeutically.

THE DETERMINATION OF THE TYPE OF PNEUMOCOCCUS.

I. *Sputum.*—Sputum from the deeper air passages, as free from saliva as possible, is collected in a sterile Esmarch

dish or other container and examined in the laboratory as follows :—Films are made and stained by the Gram stain (Sterling's modification is recommended), by the His capsule stain and by the Ziehl-Neelsen (for the presence of *Bacillus tuberculosis*). The Gram stain gives a general idea of the micro-organisms present—the causative microbe being usually very abundant. The pneumococcus appears typically in lanceolate pairs, Gram positive. Suitable lung specimens are generally relatively free from contaminating mouth bacteria. Very often the Gram stain will help to identify pneumococcus Type III (*Pneumococcus mucosus*) as the latter possesses a large capsule often staining by the Gram as well as by the His method. The His capsule stain serves to demonstrate the capsule; pneumococcus Type II possesses a larger capsule, as shown by this stain, then pneumococcus Type I; pneumococcus Type III has a still larger capsule; and Group IV pneumococcus usually possesses a small capsule, or the capsule in this case may sometimes not be seen. The capsule of *Streptococcus mucosus* is also rendered evident by the His stain, and, of course, other forms of streptococci possess no capsule at all.

(4) The following method is a rapid, simple and reliable one devised by Krumwiede and Valentine (5) :—From 3 to 10 c.c. of sputum, depending upon the amount available, are placed in a centrifuge tube, and this is placed in boiling water for several minutes until a firm coagulum results, which will occur if the specimen is a suitable one. The coagulum is then broken up with a platinum wire or a glass rod, and 0.85 per cent. salt solution is added in just sufficient quantity to carry out the test. The tube is again placed in boiling water for a few minutes to extract the soluble antigen from the coagulum, being shaken several times during the heating. The broken clot is thrown down by centrifuging, and the clear supernatent fluid is used for the test. A small amount of each of the "type" antisera (0.2 to 0.3 c.c.) is placed in each of three narrow test tubes and an equal volume of this supernatent fluid is carefully layered on top. The tubes are then incubated in the water

bath at from 50° to 55° C., and observed after five or ten minutes. If Type I, II, or III pneumococcus was present in the sputum in sufficient amount—that is, if the sputum was rich enough in antigen—a white contact ring is seen at the junction between the supernatent fluid and antiserum in the tube containing the homologous antiserum. The ring develops quickly or slowly, and is more or less marked according to the richness or poorness of the sputum in antigen. The tubes are best read by tilting them somewhat and looking at the area of contact of the two fluids against a dark background; for example, the lower edge of a dark shade raised to just above the level of the eyes. It is well to shake the tubes after twenty minutes, as many sputa show definite clouding or precipitate either at once or on further incubation, thus checking the ring reading.

In a private communication to the present author, Krumwiede has stated that of 183 specimens of sputum examined by this method, he obtained 78 per cent. positive results in Type I, 84 per cent. positive in Type II, and 88 per cent. positive in Type III pneumococcus with the respective type homologous antisera. He obtained a still higher percentage of positive reactions when the quality of the sputum was good (coagulum). If after the sputum is placed in boiling water, a firm coagulum does not result, there is little use in employing this method. With suitable specimens of sputum, however, and with a little practice, the method is accurate and very helpful in the establishment of the type diagnosis with the least loss of time. The type diagnosis should, however, always be verified by the mouse or Avery methods described below.

(*B*) *Mouse Method.*—A portion of sputum about the size of a bean is passed through three changes of sterile salt solution in Esmarch dishes to remove surface contaminations (the washing may be omitted if the sputum is too fluid). The washed sputum is then transferred to a sterile mortar, rubbed up with 1 c.c. of sterile broth or salt solution, and 0.5 c.c. of the resulting emulsion is injected intraperitoneally into a white mouse. In the peritoneal cavity of the white mouse pneumococcus grows rapidly, whereas

the majority of other micro-organisms quickly die with the exception of *Bacillus influenzae* (so-called, Pfeiffer), Friedländer's bacillus, occasionally some streptococci, staphylococci, and rarely *Micrococcus catarrhalis*. Pneumococcus, growing rapidly in the peritoneal cavity of the mouse, invades the blood stream, and as a rule the mouse dies with pneumococcus septicæmia in from fourteen to twenty-four hours.* As soon as the mouse appears sick, a drop of the peritoneal exudate, removed by means of a sterile capillary glass tube, is spread on a slide, stained by the Gram method, and examined under the microscope. If there is an abundant growth of pneumococcus in the peritoneal fluid, as usually occurs about eight hours after the injection, the mouse may be killed and the type determination proceeded with. If the growth is not abundant enough for this purpose, the mouse should be allowed to live some hours longer.

When the mouse is killed or has died, it is pinned out on its back on a necropsy board, the skin is reflected from the ventral surface, and the peritoneal cavity and thorax are opened with sterile precautions. Broth and blood-agar cultures and films are made from the heart's blood and films from the peritoneal fluid. The films are fixed by heat, stained by the Gram and His stains, and examined under the microscope. The peritoneal cavity is washed out with about 4 c.c. of sterile salt solution by means of a pipette and the entire washings are placed in a centrifuge tube. The cultures are incubated at 37° C. for subsequent verification of the type determination, or in case that, as rarely happens, contaminating micro-organisms are present which interfere with the rest.

(1) *Agglutination Method.*—When the pneumococcus is present in pure culture in the peritoneal exudate, the type determination is proceeded with as follows:—The peritoneal washings are centrifuged at low speed for a few minutes until the flakes of fibrin and cells are thrown down. The supernatent fluid is then transferred to another centri-

* The so-called *B. influenzae* and the bacillus of mouse typhoid, if present, invade the blood stream; other organisms as a rule do not.

fuge tube and centrifuged at high speed for about five or six minutes, or until the organisms themselves are thrown down. The supernatent fluid from the second tube is transferred to a test tube and laid aside for subsequent use, and the bacterial sediment is emulsified in sterile 0.85 per cent. salt solution. The concentration of bacteria in the salt solution should be such as to approximate that of a 16-hour broth culture of pneumococcus. This suspension is used for macroscopic agglutination tests when mixed with dilutions of the three fixed types of antipneumococcus serum in equal quantities of 0.5 c.c. each in test tubes of about one centimeter diameter. In the case of Type IV pneumococcus, certain cross agglutination reactions may occur in antipneumococcus serum Types I, II, and III; for this reason, and also to facilitate the determination of certain sub-groups (6) of Type II described by Avery (II*a*, II*b*, and II*x*), the optimum dilutions and time of incubation which will most certainly, according to Blake, identify the types and rule out these cross reactions are given in Table II (7), but these dilutions only apply to antiserum of the same potency as that produced by the Rockefeller Hospital. The agglutination tests are read after incubation at 37° C. for one hour, but if time presses they can generally be interpreted after fifteen minutes with a little experience.

TABLE II.

DETERMINATION OF PNEUMOCOCCUS TYPES BY AGGLUTINATION.

Pneumococcus Suspension 0.5 c.c.	Serum I. (1 : 20) 0.5 c.c.	Serum II. (undiluted) 0.5 c.c.	Serum II. (1 : 20) 0.5 c.c.	Serum III. (1 : 5) 0.5 c.c.
Type I	+ +	—	—	—
Type II	—	+ +	+ +	+ +
Sub-groups II *a*, *b*, *x*	—	+	—	—
Type III	—	—	—	+ +
Group IV	—	—	—	—

Incubation 1 hour in water-bath at 37° C.

In addition to the agglutination test, the bile solubility test described above is performed at the same time for the differentiation of pneumococcus from streptococcus; 0.8 c.c. of the bacterial suspension obtained from the peritoneal fluid as described is placed in a test tube, to this is added 0.2 c.c. of sterile ox bile; these are mixed in the test tube and incubated for one hour at 37° C. with the agglutination tests. If the micro-organism under consideration is a pneumococcus it is dissolved by the bile and the mixture becomes clear.[a] Solution in bile does not take place in the case of other bacteria.

Group IV pneumococci with the serum dilutions given in Table II do not agglutinate at all. Agglutination may be clearly demonstrated by gentle agitation of the tubes.

Agglutination of Types I, II and III pneumococci occur in a few minutes; sub-groups of Type II pneumococcus show partial agglutination in undiluted Type II serum after one hour's incubation, but these sub-groups fail to agglutinate in antiserum II diluted 1 to 20 at the end of one hour's incubation at 37° C. If no agglutination occurs in any of the tubes and the organism is a Gram positive bile soluble diplococcus, it is classified as a Group IV pneumococcus.

(2) *Precipitin Method.*—The determination of pneumococcus types by macroscopic agglutination with peritoneal washings, as described above, is often interfered with when other organisms have grown together with pneumococcus in the peritoneal exudate. This difficulty may be obviated by the application of a fact discovered by Dochez and Avery (8), and applied by Blake (7). The former authors have shown that pneumococcus produces in broth cultures during the active period of growth a soluble substance which gives a specific precipitin reaction with the type homologous antipneumococcus serum. This soluble substance of pneumococcus origin is present in sufficient quantity to give this precipitin reaction in the peritoneal exudate of the mouse dead with pneumococcal infection. The

[a] Bile-insoluble strains of pneumococci occur, but they are very rarely encountered.

clear supernatent fluid obtained from centrifuging the peritoneal washings, which was placed aside as above directed, is mixed in equal volume with 0.5 c.c. of each type of antipneumococcus serum in a series of small test-tubes as follows :—

Tube 1, 0.5. c.c. antiserum I (1 : 10) + 0.5 c.c. supernatent fluid; tube 2, 0.5 c.c. antiserum II (undiluted + 0.5 c.c. supernatent fluid; tube 3, 0.5 c.c. antiserum II (1-10) + 0.5 c.c. supernatent fluid; tube 4, 0.5 c.c. antiserum III (1 : 5) + 0.5 c.c. supernatent fluid. An immediate precipitin reaction usually occurs in the tube containing the type homologous antiserum without incubation, the other tubes remaining clear. Two tubes of antiserum are used for differentiating between Type II pneumococci and members of the Type II sub-groups—the former giving a precipitin reaction in both tubes, and the latter only in the undiluted Type II antiserum. The absence of a precipitin reaction in all tubes indicates a Group IV pneumococcus (Table III). Organisms other than the pneumococci do not produce substances which react in this way with antipneumococcus serum.

TABLE III.

DETERMINATION OF PNEUMOCOCCUS TYPES BY THE PRECIPITIN METHOD (11).

Supernatent Peritoneal Washings, 0.5 c.c.	Serum I (1 : 10)	Serum II (undiluted)	Serum II (1 : 10)	Serum III (1 : 5)
Type I	+ +	—	—	—
Type II	—	+ +	+ +	—
Sub-groups II, *a*, *b*, *x*	—	+	—	—
Type III	—	—	—	+ +
Group IV	—	—	—	—

The precipitin method with sub-group II pneumococci is not as satisfactory as with the " fixed " types, for some of the former give peritoneal workings which fail to react

with undiluted Type II antiserum; this, at present, is of little importance from the point of view of specific treatment.

About 40 per cent. of normal individuals carry pneumococci in their mouths; these pneumococci in most cases belong to Group IV: sometimes Type III is found and more infrequently Type I and Type II. Such persons may acquire pneumonia due to a type other than that which they carry normally. In these cases, the pneumonia-producing type is the more virulent and invasive, and rapidly outgrows the less pathogenic variety in the peritoneal cavity of the mouse. The Avery method, however, has no such selectiveness for the disease-producing type; hence the importance of verification of the type diagnosis by the mouse method or by plate culture in this and the Krumwiede method.

(C). The following method was described by Avery (9), and gives good results. A suitable portion of pneumococcus sputum is selected about the size of a bean, washed in three changes of sterile salt solution, emulsified in a sterile mortar with about 1 c.c. broth, and the whole inoculated directly into a centrifuge tube containing about 4 c.c. of glucose-blood-broth (1 per cent. glucose, 5 per cent. sterile defibrinated rabbit's blood; the broth is made from ordinary meat infusion broth, 0.3 to 0.5 per cent. acid or P_H 7.8, and sterilised by the Arnold method for twenty minutes on three successive days; sufficient sterile defibrinated rabbit's blood and 20 per cent. glucose solution are added). The tube is incubated in the water bath at 37° C. for five hours; at the end of this time a blood-agar plate is smeared with a loopful of the clear fluid for the subsequent isolation of the pneumococcus and confirmation of type. The red blood-cells are then removed from the culture medium by centrifuging at low speed. Three c.c. of the supernatent bacterial suspension are transferred to a second centrifuge tube containing about 1 c.c. sterile ox bile, and the mixture allowed to stand in the water bath at 37° C. until solution of the pneumococcus bodies has taken place (about twenty minutes). 0.5 c.c. of the bile

solution of pneumococcus is used for a precipitin test by mixing with an equal volume of each type of antipneumococcus serum. The 5-hour period of incubation is usually sufficient to produce an abundant growth of pneumococcus in the special culture medium with a minimum growth of contaminating micro-organisms. The addition of the bile to the grown culture causes solution of the pneumococcus bodies, leaving other organisms unaffected. The latter, if present, not being bile-soluble, may be removed from the bile solution by high speed centrifuging. If bile is not available, and if other organisms are not present in sufficient numbers to interfere with the reaction, the type of pneumococcus may be determined by macroscopic agglutination. The mixtures of pneumococcus solution in bile and the immune sera are incubated in the water bath at 37° C. for one hour before reading. This method has given rapid and fairly accurate results in the hands of several different observers.

II. *Determination of Types of Pneumococcus by Precipitin Reaction in Urine* (8).—The soluble substance formed in broth cultures by pneumococci was mentioned above. Type III pneumococcus forms the largest amount of this substance, Type II less, and Type I the least. Elaboration of this substance by pneumococcus Type IV has not yet been studied owing to lack of specific antisera for this group. This soluble substance of pneumococcus origin has been detected by precipitin tests in the urine of 65 per cent. of cases of lobar pneumonia due to Pneumococcus Types I, II, and III. The precipitin reaction in the urine is specific for the type of pneumococcus with which the individual is infected, and is not found in cases of respiratory disease due to organisms other than pneumococcus. The soluble substance may appear for the first time in the urine as early as twelve hours after the onset of the disease or at a later stage, and it may continue to be excreted for a time during convalescence. It is almost always found in the urine when septicæmia exists. The presence of the substance in the urine of the patient may be used for the immediate determination of the type of the

infecting pneumococcus, but in all cases the type determination should be confirmed by the mouse or Avery methods already described.

(*a*) *Unconcentrated Urine.*—A specimen of urine is cleared by centrifuging and 0.5 c.c. of the clear urine is mixed with an equal volume of each type of antipneumococcus serum (undiluted) in a series of agglutination tubes. The precipitin reaction may occur immediately after mixing the urine and serum, or may require incubation in the water bath at 37° C. for one hour. The strength of the reaction may vary from a barely perceptible cloud to a heavy flocculation (see Table IV.). The reagents for this test should be perfectly clear. In case the reaction is negative, the following method may be applied.

(*b*) *Concentrated Urine.*—To 25 c.c. of urine, preferably from a 24-hour specimen, a few drops of acetic acid are added, and the urine is then boiled down to a volume of 5 c.c., filtered through glass wool to remove precipitated albumen, and the filtrate is added to 8 or 10 volumes of 95 per cent. alcohol. The precipitate which forms is collected by centrifuging, dried to remove the excess of alcohol, and the residue is extracted for a few minutes, using gentle agitation, with 2 to 3 c.c. of 0.85 per cent. salt solution, which redissolves the soluble pneumococcal substance. The undissolved matter is removed by centrifuging, and the clear salt solution extract is used for the precipitin test.

TABLE IV.

TYPE DETERMINATION OF PNEUMOCOCCUS BY PRECIPITIN REACTION IN URINE.

0.5 c.c. urine from	Antiserum I 0.5 c.c.	Antiserum II 0.5 c.c.	Antiserum III 0.5 c.c.
Pneumonia, Type I	+	—	—
,, ,, II	—	+	—
,, ,, III	—	—	+
,, ,, IV	—	—	—

III. *Determination of Type of Pneumococcus in Blood Culture and by Lung Puncture.*—(*a*) *Blood Culture.*—About 15 c.c. of blood are withdrawn from a vein, usually situated near the bend of the elbow, by means of a sterile syringe and sharp needle (gauge about No. 18) under aseptic precautions. Ten c.c. of the blood are added to a flask containing 150 c.c. beef infusion broth previously warmed to 37° C., the blood and broth are mixed and incubated as soon as possible; of the remaining blood, 1 c.c. and 3 c.c. quantities are each mixed with about 15 to 20 c.c. melted agar, cooled to 43° C., and plates are poured and incubated. The cultures if positive show growth within twenty-four hours, but occasionally several days' incubation may be required. If growth occurs in the broth culture the supernatent fluid is turbid and, on shaking, the mixture is brownish-red in colour (methæmoglobin formation). On the plates the colonies, which are surrounded by a greenish-black zone, likewise due to methæmoglobin formation, may be counted, and a numerical idea of the septicæmia can thus be obtained. Stained preparations of the incubated blood culture should be examined microscopically in order to rule out contamination. For type determination 10 c.c. are removed from a positive broth culture and centrifuged at a low speed to remove the blood cells. The supernatent fluid is pipetted off, and the bacteria are removed from it by high speed centrifuging; the bacterial sediment is suspended in sterile 0.85 per cent. salt solution, and with this suspension macroscopic agglutination tests are performed as described above.

(*b*) *Lung Puncture.*—This procedure is very rarely necessary, and should only be resorted to in serious cases, and when a suitable specimen of sputum or a positive blood culture or urine reaction cannot be obtained. Cultures of the material obtained by puncture are made in broth, and the type determination made by the agglutination method.

IV. *Identification of Pneumococcus Type III (Pneumococcus mucosus) by Morphological and Cultural Characteristics.*—Pneumococcus Type III (*Pneumococcus mucosus*)

is generally somewhat plumper and less lanceolate than the other types of pneumococci. Its capsule is larger, as shown by the His stain, and is usually stained pink with the counterstain of the Gram stain. The colonies on solid media are more moist, mucoid and larger than those of the other types. The peritoneal exudate in the mouse is usually quite mucoid, and can be drawn out into strings with the platinum wire. It occasionally happens, however, that strains of pneumococci Type III are encountered which do not show well-developed mucoid characteristics, and Type II strains are found which show mucoid characteristics well developed. Therefore, the serological method of differentiation is the most reliable. It should be remembered that *Streptococcus mucosus* (which possesses a capsule) is not bile-soluble.

The type of infecting pneumococci should always be verified from a culture of the heart's blood of the mouse or by the Avery method.

(*To be continued.*)

CONGENITAL CYSTIC KIDNEYS AND LIVER, GASTRIC ULCER, GASTRO-ENTEROSTOMY: LATER, GASTRIC CARCINOMA: PERFORATION.

By T. GILLMAN MOORHEAD, M.D., F.R.C.P.I.

In April, 1918, I received a letter from a patient asking for an appointment. He told me that he was a miller by trade, was 45 years of age, and had been quite well until twelve months ago, when he began to suffer from dyspepsia, with severe pains in the chest, and from vomiting. He had at first got complete relief from the consumption of bisurated magnesia, but of late this had failed to alleviate his sufferings. On arrival, I saw a tall man, extremely emaciated: and on examining the abdomen, I was fortunate enough to see at once large

peristaltic waves originating obviously in the stomach. The diagnosis of pyloric obstruction was therefore easily made, and was confirmed by the discovery of an easily palpable, mobile lump in the epigastrium. Further examination, however, rather complicated matters, as, in addition, a large swelling was felt on the left side of the abdomen, in the kidney region, and extending downwards from that region. As far as I could determine, this swelling was composed of an upper part, which felt like a somewhat enlarged kidney, and a lower part, also feeling rather like a kidney, and separable from the upper portion by a distinct groove. The mass was slightly moveable on deep respiration. As the urine was absolutely normal, much doubt existed in my mind, and in that of Mr. Johnston, who later saw the case with me, as to the nature of this tumour, and at first we greatly feared that it might be a malignant retroperitoneal mass, in which case operation, even to relieve the stomach symptoms, seemed hardly justifiable, inasmuch as the patient was extremely weak and thin. However, a test meal administered a couple of days after the patient was first seen by me showed the presence of abundant hydrochloric acid, and in consequence I decided to recommend operation. The abdomen was opened, a pyloric stricture was found, presumably non-malignant, and a gastro-enterostomy was performed. The patient was so ill that Mr. Johnston thought it inadvisable to do anything more than what was absolutely necessary, and in consequence he closed the abdomen without investigating the left-sided swelling. Rapid improvement followed: within a fortnight the patient insisted on returning home, and in October he wrote to inform me that he had gained nearly two stone in weight, and had long since been back at his work.

I heard nothing further till November 5th, 1919, *i.e.*, about 18 months after the operation.

He then again came to see me, and told me that he had remained perfectly well till five weeks previously, when he again began to suffer from severe pain after his

food, and from loss of weight and energy. He then looked extremely ill, and I urged him to come into hospital at once. He refused at the time, but subsequently entered hospital on December 16th. The pyloric lump was still very easily palpable, and was extremely tender to touch; the mass on the left side could also be made out, and I now thought that I could feel something also on the right side, but the abdomen in general was somewhat distended, and in consequence palpation was a little difficult. A test meal now showed practically no HCl., and a trace of lactic acid; while an *x*-ray report showed that the stomach was small, and had a well-marked hour-glass constriction, which appeared to be present at the level of the gastro-enterostomy opening: there was slight irregularity in outline in the region of the stricture, suggesting the presence of a chronic perforating ulcer. Food was seen to pass through the pylorus in small quantity as well as through the new opening. On December 21st, just as our examination was completed, the patient announced his determination of returning home for Christmas. He came back again on January 1st, looking worse than ever.

My diagnosis now lay between malignant disease of the stomach and gastro-jejunal ulcer, but inasmuch as the probabilities were in favour of the former diagnosis, and also against the likelihood of being able to afford much relief by operation, I decided, with the approval of Mr. Johnston, to wait a few days and see what relief could be obtained by dieting and sedatives. On the morning of January 3rd he appeared much as before; he still had pain, but on the whole felt much easier. That evening I was sent for urgently owing to the sudden occurrence of severe abdominal pain. It was obvious that a perforation had occurred, and at 7 o'clock the abdomen was opened. A perforation in the anterior stomach wall was stitched, and the usual surgical procedure was adopted. The patient survived till the morning of January 7th. During the interval between the operation and his death he complained only of increasing weakness, and was free of pain.

As no permission was obtained for a *post-mortem* ex-

amination, it was only possible to remove the abdominal organs through the operation incision. The abdominal viscera were matted together to a considerable extent by evidently old-standing adhesions; above the great omentum evidence of more or less diffused peritonitis was visible; the mesentery was studded over with small malignant nodules. On opening the stomach the old gastro-enterostomy opening was found to be quite healthy, though, even after the lapse of eighteen months, some chromicised catgut was present. This is the third occasion on which I have found such catgut present at a period months subsequent to the operation of gastro-enterostomy, and I therefore feel inclined to doubt the wisdom of employing it for this purpose. Just to the left of the new opening a large malignant ulcer was found, which had caused the constriction and obstruction of the outlet of the stomach about an inch to the right of the pylorus. This ulcer had perforated anteriorly. Microscopically, it proved to be of ordinary scirrhus type. The mass in the left side proved to be a congenital cystic kidney, which was divided by a transverse depression into a well-defined upper and lower lobe, corresponding to the masses felt at the first examination, and which had proved so puzzling. The right kidney was also cystic, but was smaller than the left; it was bound down so firmly by adhesions that even at the *post-mortem* examination it was palpated with some difficulty. The cysts of the kidneys when cut into were found to contain a fluid with a curious sheen. On microscopical examination, the cause of this was found to be the presence of many cholesterin and leucin crystals. The liver was also cystic, the cysts being fairly numerous, and varying in size from a pinhead to a hazel nut; they were clustered, especially in the left lobe, and in the region of the transverse fissure. Microscopically, the cysts did not differ in any way from those described as so often found in association with congenital cystic disease of the kidney. They contained a perfectly clear fluid, were lined by flat epithelium, and were surrounded by a thin, fibrous wall. No abnormalities were found in other organs.

The points of interest in this case are as follows :—

(1) The combination of gastric ulcer followed by gastric carcinoma, with congenital cystic kidneys and cystic disease of the liver; a combination which, as already pointed out, rendered the diagnosis of the stomach condition rather doubtful at the first examination.

(2) The malignant change in the gastric ulcer in spite of the gastroenterostomy. The presence of abundant HCl, and the great gain in weight after the first operation, seem conclusive evidence in favour of the ulcer being non-malignant at the time the first operation was done.

(3) The cystic condition of the liver. Into the nature of these cysts it is quite unnecessary to enter, as the subject is fully dealt with in Rolleston's "Diseases of the Liver." Clinically, they are of little importance, but inasmuch as they are rarely found except in association with cystic disease of the kidney, their occurrence is strongly in favour of the latter disease being of congenital origin

REVIEWS.

Constipation and Allied Intestinal Disorders. By Arthur F. Hurst, M.A., M.D., F.R.C.P.; Physician and Neurologist to Guy's Hospital; Temporary Lieutenant-Col. R.A.M.C. Second Edition. London: Henry Frowde, Oxford University Press; Hodder and Stoughton, Warwick Square, E.C. 1919.

The first edition of this book appeared just ten years ago, and was then generally welcomed by the profession as the first complete and systematic study of the subject with which it dealt, after the introduction of *x*-ray examination for the purpose of investigating the movement of the intestinal tract. The author of the book was indeed one of the pioneers in introducing *x*-ray examinations, and his observations enabled him to classify the varieties of constipation more precisely than had been previously possible. The present edition was almost ready for publication in 1914, but was delayed in appearance by the outbreak of war. It is described in the preface as being rather a new book than a new edition, and it indeed contains much new matter, but the general form of the first edition is retained. Between 1909 and 1914 attention was much focussed on the surgical treatment of constipation by the writings of Arbuthnot, Lane and others. On this aspect of the problems Hurst has a good deal to say, and all his remarks appear to us to be essentially sane. Indeed, the entire volume is characterised by its broad-minded outlook and by its well-based conclusions, and is a welcome relief to anyone who has deplored the wide acceptance of the views inculcated by enthusiastic advocates of colectomy and the like for practically every ill; views based too often, we believe, on insufficient and distorted evidence.

In addition to studying constipation as such, the compli-

cations resulting therefrom are fully dealt with; and the various methods of treating the various forms of constipation are also fully considered. The book, as a whole, is a testimony to the industry and scientific outlook of the writer. It is well got up, is well printed and has many illustrations.

The Physiology of Muscular Exercise. F. A. Bainbridge, Monographs on Physiology. Longmans, Green & Co. Pp. 216.

This monograph is the fourth in the excellent series issued by Messrs. Longmans. Physiology has grown at such a rate that we shall soon have a text-book on each branch of the science. In chemistry only the most elementary handbooks deal with both the inorganic and organic divisions of the subject, and it is probable that future works on general physiology will be along similar lines, content to provide an introduction to the science without going any farther.

Professor Bainbridge's book is well worthy of inclusion in an already famous series. He has surveyed a very wide field of modern research and has collected his results in a very compact form. The book will be of use to the general practitioner who wants information on the muscular system in relation to exercise and fatigue. The heart specialist will find much of interest in the fourth and fifth chapters, which give an excellent account of the cardiac output and a comprehensive summary of the great work of Starling and his colleagues.

The book is very easily read, mathematics are reduced to a minimum and equations are only given where absolutely necessary, as in the chapter on the respiratory changes during exercise and the influence of the reaction of the blood. From the students' point of view the introductory chapters might have been enlarged somewhat so as to include a discussion as to the actual nature of muscular contraction and the underlying physical pro-

blems. The twelve pages of references at the end of the book complete a valuable contribution to contemporary physiological literature.

THREE books on the subject of children have come before us recently.

1. *The Nervous Child.* By H. C. Cameron. Oxford Medical Publications. 1919.
2. *Child Welfare.* By SIM WALLACE, London : Baillière, Tindall & Cox. 1919.
3. *Diseases of Children.* By JAMES BURNET. Edinburgh : E. & S. Livingstone. 1919.

1. For the first of these we have nothing but praise. Anything that comes from the pen of Dr. Cameron is worth reading, but this little book is particularly original in its conception and working out. He attacks the problem of the nervous child in all its aspects, and shows how that bugbear of doctors, nurses, and mothers, the child that is too "highly strung," to do anything that is required of him, can by care and suggestion be converted into quite a sensible little mortal. It is a book that can be recommended to mothers and nurses as well as doctors, and should have a large circulation.

2. Dr. Sim Wallace in "Child Welfare" finds that welfare to be situated in sound teeth, and he carries on the crusade against oral sepsis begun in his earlier works with his usual vigour. Much of what is here has been said before by him, but it often bears repeating.

The chief points of importance in the present work are his theories on the use of the saliva, and the part the tongue plays in the development of the jaw. He makes, as usual, many digs at "specialists," from anthropologists to laryngologists, all of whom he considers only too prone to "aloofness, apathy, and ignorance!" However, his zeal and vigour always make his works

worth reading, and there is no doubt that the problem he sets out to solve is one of the most vital importance to the nation.

3. Dr. James Burnet's little manual of "Diseases of Children" presents his subject in the concise form of a small text-book. The book is well written and illustrated, but it is a question whether there are not too many of these small text-books.

The American school pours them out by the dozen, and we are tempted to think the time spent in compiling them would often be better spent in some original research on some branch of the subject.

Diseases of Women. By THOMAS GEORGE STEVENS, M.D., B.S. (Lond.); F.R.C.S. (Eng.); M.R.C.P. (Lond.). With 202 illustrations. Second Edition. London: University of London Press, Ltd. 1919. Pp. 443 + xv.

IT is most difficult to decide on the amount of space in gynæcological text-books which should be allotted to anatomy and development. It is supposed that the student has been taught and has passed in these subjects in his preliminary examinations. Is the author of the gynæcological text-book to re-teach him these subjects, and to what extent? Dr. Stevens explains anatomy and development clearly and concisely, and if a refresher is needed it is set forth here. He has produced a second edition which is a worthy successor to his initial effort. He has not followed the modern leaning to much illustration, and little text for the former is subordinate to the latter. Neither does he follow any special arrangement for his data, and the eighteen chapters while containing all that is necessary are not grouped in any apparent set method, although it is stated in the preface that he follows a classification based on pathological processes. We are confident that the author is an excellent teacher, for he makes his meaning comprehensive, and the illustrations

which, with few exceptions, he himself has drawn are most descriptive.

We must conclude by congratulating Dr. Stevens and the London University Press on a volume which is a creditable addition to medical literature in general, and to the ever-growing tree of gynæcological literature in particular. B. S.

Diseases of the Nose and Throat. By HERBERT TILLEY, B.S., F.R.C.S.; Surgeon, Ear and Throat Department, University College Hospital, London; Surgeon, Ear and Throat Department, King George's Hospital, &c. London: H. K. Lewis & Company, Ltd. 1919.

THIS is the fourth edition of Mr. Tilley's text-book, and, like so many others, is gradually getting larger. With this no fault can be found, as it is now necessary to include chapters on diseases of the œsophagus and larger air-passages which have passed into the hands of the laryngologist with the introduction of the broncho-œsophagoscope.

The author has carried out faithfully his statement in the preface—that he prefers to describe fully methods which he himself uses than to fill up the text with descriptions of methods which he does not contemplate using. On this he is to be heartily congratulated, and the elimination of obsolete methods is thorough. No space is wasted, and the various drawings are good, and accurately show the anatomical relations or mechanical details, as the case may be. A great many new drawings have been added and many new methods described, all up to date, with the possible exception that the author describes bismuth as being used for *x*-ray examinations, whereas barium seems to be the favourite with most radiographers.

The text-book is to be heartily recommended, and the author accorded unstinted praise for what must have been a heavy, if pleasant, task.

Applied Anatomy and Kinesiology. By WILBUR PARDON BOWEN, M.S.; Professor of Physical Education, Michigan State Normal College [Ypsilanti, Michigan]. Second Edition. Philadelphia and New York: Lea & Febiger. 1919.

THIS is an interesting book on a very interesting subject. Kinesiology is defined by the author as the science of bodily movement, and the work treats of the methods of studying muscular action, the bones as levers, muscular control, and finally the various muscles of the limbs and trunk are dealt with in considerable detail.

The practical applications of a knowledge of muscular action are never lost sight of, and the effects following paralysis of individual muscles are pointed out. There are special sections dealing with the upright position defects of posture; gymnastic movements; plays, games and sports; and industrial occupations.

The numerous illustrations included in the text are excellent, and the photographs which are reproduced to show the various muscles and muscle groups in action are most interesting.

Leçons de Pathologie Digestive (quatrième série). Par M. LOEPER, Professeur agregé à la Faculté de Médecine de Paris, Médecin de l'hôpital Tenon. Paris: Masson et Cie. 1919. Pp. vii + 298.

M. LOEPER has profited by his experiences of the war, which have afforded him an opportunity of studying a large number of cases of gastritis, due especially to infections and intoxications. He lays stress on the value of cytology in diagnosis of gastric troubles. For the sthenic form of gastritis he finds that sugar solutions are very useful. They are soothing, and produce by their con-

centration a mucous exudate, as well as supplying a large number of calories per diem.

Gastritis resulting from gas poisoning, from nervous disorders, from suprarenal abnormalities, &c., are fully dealt with.

There is a thorough discussion of the mechanism of the pain in abdominal affections, especially in cancer of the colon. M. Loeper attributes the crises of acute pain in cancer of the colon in some cases to inflammatory changes in the mesenteric nerves, solar plexus, &c., and in other cases to direct cancerous outgrowths along the course of the nerves, the plexus of Auerbach being especially involved.

The work forms an interesting addition to abdominal literature.

Diseases of the Ear. By EDWARD BRADFORD DENCH, Ph.B., M.D., &c.; Professor of Diseases of the Ear in the University and Bellevue Hospital Medical College; Aural Surgeon, New York Eye and Ear Infirmary, &c., &c. New York and London: D. Appleton & Co. 1919.

THIS is a fifth edition of Professor Dench's well-known work. A perusal of the preface, however, indicates a very partial revision, and unfortunately this is borne out as the text is read.

The strongest part of the work is the first section, on Anatomy and Physiology, and the information there is clear and put in a pleasant form, which makes it interesting to read. The chapter on Physical Examination is out of date, and superfluous in a work intended for specialists, and might well have been omitted.

Under the head of Inflammation of the External Auditory Canal, no mention was made of vaccine treatment for staphylococci infection; nor, indeed, was that

coccus made responsible for this troublesome and painful affliction

Very little was said of the various aids to hearing, nor indication given as to the suitable instruments for the different forms of deafness.

It seems to be a great pity that a more complete revision to bring the text-book up to date was not made.

The Sexual Disabilities of Man and their Treatment and Prevention. By Arthur Cooper, M.R.C.S., L.R.C.P. Two Plates. London : H. K. Lewis. 1920. Cr. 8vo. Pp. viii + 266.

When the average medical man starts practice he is obsessed with the sense of his ignorance of the diseases people really suffer from. He could make a diagnosis of appendicitis or locomotor ataxia, but the patients who consult *him* present symptoms which lead him to no conclusion. Gonorrhœa he knows, and with syphilis he is familiar, but spermatorrhœa, impotence, frequent emissions, nervous insomnia and sterility are outside the knowledge inculcated during his five years' studentship. On these he will find more information in patent medicine advertisements than in his orthodox text-books, and he is driven to choose between inaccurate information and none.

The repression of sexual knowledge is practised by most medical men, even by many who deplore it; for the attitude of doctors differs but slightly from that of the public. The advice offered to a patient in sexual difficulties depends more on the school of morality than on the school of physic from which the practitioner has graduated.

The volume before us is free from sectarian bias and cant, and deals with the subject as with any other physiological or pathological subject. Sexual phenomena

are presented without limelight and without indecent shadow. The book reveals breadth of mind and large humanity, and never confuses natural with adventitious results. The first part of the book deals with sterility, and discusses the subject adequately. Impotence is then considered, and many practical suggestions advanced.

The last part of the book deals with prevention of sexual disabilities, and is perhaps the most interesting. The author believes that books on the subject of masturbation do no good to boys and girls, and that the proper person to instil physiological knowledge is the father or mother. If the parents have earned the trust of their offspring, this is certainly the best way, but if otherwise, the child will believe that the parent, for his own selfish ends, is attempting to side-track his emotions. Given a parent with common-sense and truthfulness, the subject is not difficult. Two new chapters, on Continence and Hygiene, have been included in this edition, and add value to a book already valuable. We know of no book in which sexual disabilities are better treated.

Manual of Surgery. Rose & Carless. Tenth Edition. By Albert Carless, C.B.E., M.S. Lond., F.R.C.S. Demy 8vo. Pp. xii + 1562, with 33 plates and 614 figures.

Coincident with the appearance of its tenth edition the manual has attained its majority. It has now been in the hands of students for over 21 years, and is, as the French say, *bon comme le pain*—one forgets how good it is until one tries a substitute.

In the present edition the sections dealing with infected wounds and compound fractures have been enlarged, and there is an appendix of 28 pages on military surgery.

The *x*-ray pictures have been gathered into special sheets and are clearly printed upon special paper. Perhaps

because we have recently met with the condition 4 times in 50 consecutive operations, we notice an omission of emphasis on the subject of sliding hernia which is dismissed with a brief mention of caecocele.

In his preface the author anticipates that in time the manual will return to its former size and price when the new matter has been sifted. In any case we think its currency assured.

A Manual of Hygiene and Sanitation. By SENECA EGBERT, M.D. Seventh Edition, enlarged and thoroughly revised. Philadelphia and New York : Lea & Febèger. 1919. Pp. 554.

THIS edition has a considerable amount of new useful matter relating to Military Hygiene, and the section on Disposal of Sewage has been re-written up to date. The illustrations are good, but it would add to their usefulness if the page they illustrated was mentioned.

Handbook of Sanitary Law for the use of Candidates for Public Health Qualifications. By B. BURNETT HAM, M.D. Eighth Edition. Edited by HENRY R. KENWOOD, M.B. London : H. K. Lewis & Co., Ltd. 1920. F'cap. 8vo. Pp. xxiv+216.

DURING the eventful years that have elasped since the appearance of the seventh edition in 1913 not much public health legislation has been accomplished, and this little handbook was easily brought up-to-date. At the last moment, however, the Ministry of Health Act, 1919, made far-reaching changes, and these are clearly summarised in the Introduction, and the reader is warned that most of the references to the Local Government

Board must now be read as relating to the Ministry of Health.

Clearness of arrangement, the judicious use of heavy faced type and an excellent index enable this handbook to be easily and profitably consulted.

Syphilis in Childhood. By LEONARD FINDLAY, M.D., D.Sc., F.R.C.P.S.G.; Lecturer on Medical Disease of Infancy and Childhood, Glasgow University; Visiting Physician, Royal Hospital for Sick Children, Glasgow, &c. London: Henry Frowde and Hodder & Stoughton. 1919. Pp. 154+xii.

WE have seldom read a more useful and practical book than Dr. Findlay's little work, and we heartily congratulate him on its production.

The clearness and conciseness with which it is written mark its author as one who has a thorough and practical knowledge of his subject. Both congenital and acquired syphilis in infancy and childhood are very ably and fully described, and each chapter is well worth careful study. The pages devoted to the intravenous injection of salvarsan and its allies to infants are especially instructive.

A review of this work would be incomplete without reference to the excellent illustration and coloured plates which it contains; and the number of case histories quoted add very materially to its interest and value.

Half a Century of Small-pox and Vaccination. Being the Milroy Lectures delivered before the Royal College of Physicians of London, 1919. By JOHN C. MCVAIL, M.D. Edinburgh: E. & S. Livingstone, N.D. Pp. viii + 87.

THESE interesting lectures deal with the History of Small-pox, the History of Vaccination, and the Control of Small-

pox in the present day. The striking fact is pointed out that the return of soldiers from the Franco-Prussian War led to the European pandemic of 1870-3, whilst the break-up of the armies in the recent war has had no such effect. This is partly due to the efficient revaccination of the combatant forces and partly to weakening of small-pox poison. Owing to the size of our armies the adult population has never been so freely revaccinated, whilst infant vaccination has largely fallen into disuse. Past epidemics have found the young protected, and the mortality has fallen on the adults; will this be reversed if a new outbreak occurs?

Dr. Millard's criticism of the lectures and Dr. McVail's answer are given in an appendix.

ABSTRACTS OF CURRENT LITERATURE.

MEDICINE.

GENERAL MEDICINE.

LHERMITTE: *The Syndrome of Quadrigeminal Neoplasms: Relation of Tumours to the Corpora Quadrigemina to Trauma.* "Gazette des Hôpitaux." January, 1920.

IN spite of assiduous research, Lhermitte states that the functions of the corpora quadrigemina remain in obscurity. On experiments on the monkey, partial destruction of the corpora quadrigemina does not lead to any permanent disability—any persisting disorder being due rather to injury of subjacent nerve bundles. Our knowledge of the normal and pathological anatomy of these bodies is limited to their connections with the motor nuclei of the eye, the superior cerebellar bundles, the posterior longitudinal bundle, the paths of general sensibility, the acoustic sense, and finally with the pyramidal bundles.

A destructive lesion—hæmorrhage or softening, or a neoplasm—gumma or tuberculoma, bring about functional or organic lesions of bundles which mask purely quadrigeminal symptoms. Lhermitte seeks, therefore, not to define the syndrome but to arrive at a possible method of diagnosis of neoplasms of the corpora quadrigemina.

Lhermitte goes on to show the inconsistence of the so-called quadrigeminal syndrome. Nothangel states that lesions of the superior bodies produce disturbances of equilibration and co-ordination; but pathological investigations do not furnish any proof of this. Lesions of the superior pair lead to diminution of visual acuity or blindness; lesions of the inferior pair lead to a paralysis or paresis of the oculo-motor nerve. One cannot state anything definite on the pupillary condition, but it appears that lesions of the superior pair lead to a loss of pupillary reaction. Nothangel bases his diagnosis on the following symptoms:—(1)

Titubating gait, identical with that of cerebellar ataxia; (2) Bilateral asymetrical ophthalmoplegia. Weinland and Siebernmann add auditory disturbances to these symptoms. Yet Nothangel's syndrome was not borne out in a case of Nessen's in which autopsy revealed a tumour definitely limited to the corpora quadrigemina, although Nothangel's two pathognomonic signs were absent. Von Minakow is forced to admit that none of these symptoms are characteristic. He says that disturbances of vision are not many; lesions of the superior bodies lead to dilatation of pupils which react imperfectly to light and accommodation, though these even are not constant in experiments on the cat and monkey. Ocular palsies are, according to Von Minakow, more frequent than pupillary changes. Disturbances of co-ordination are frequently observed—sometimes due to true atony or cerebellar inertia. Auditory phenomena—reduced acuity of hearing or subjective noises—are not typical of, though often associated with, lesions of the corpora. Millain also regards Nothangel's two symptoms (ataxia and ophthalmoplegia) as non-pathognomonic of lesions of the corpora.

Lhermitte argues that cases of tumours strictly limited to the quadrigeminal region will alone definitely establish the clinical picture. He cites the following case history :—A soldier, Louis F. (family and personal history negative), was wounded on September 25, 1915, on the left postero-parietal region by a piece of shell; was trephined in October for fracture of the cranial vault, with nervous disturbances and failure of memory. He was discharged on January 1, 1916, with general asthenia, slight headaches and periodic vomiting. In September, 1916, he rejoined his regiment, all troubles having disappeared. On December 25, 1916, F. displayed noticeable adiposity. Early in 1917, F. had an epileptic fit (general), followed by prolonged coma. In October, 1917, he reported the following symptoms :—Occipital headache, vertigo, failure of memory, drunken gait, disturbances of equilibration with positive Romberg and exaggerated patellar reflexes. Later nausea and vomiting supervened. He could only stand with the legs widely separated; any attempt at bringing the legs together was accompanied by loss of balance. There was incoordination of the lower extremities without tremor, positive Kernig, slight ataxy of the upper extremities. Superficial and deep sensation, and cutaneous reflexes were not disturbed. The reflexes in the upper extremity were increased on the right side; muscular power was retained in the four limbs; muscle tone was increased in the lower limbs. There were noises in the ear, and diminution of auditory power for low sounds. Vision was normal, except for slight myopia, and divergent strabismus dating from infancy. Extrinsic muscles, pupillary reflexes, optic discs, and field of vision were normal. The psychic functions—except memory—were undisturbed. He was forgetful.

Lumbar puncture yielded a fluid containing no albumen or excess of leucocytes, and under normal pressure.

In April, 1918, the patient had become very fat, with exaggerated appetite and somnolence without polydypsia, polyuria, or glycosuria. Later syncopal attacks with convulsions, and accompanied by dyspnœa, cyanosis, and regular, rapid pulse, occurred. Pupils were normal. Babinski appeared bilaterally with nocturnal vomiting. Later convulsions with coma occurred at night time. On April 22nd, 1918, the patient became comatose, with stertorous breathing. Rhonchi were audible. The patient then became perfectly insensitive, with divergent squint and absence of pupillary reaction. Babinski and Oppenheim phenomena were positive. The tendon reflexes were normal and equal; the pulse full and regular. There was no further convulsion. The patient died without regaining consciousness on April 25, 1918.

Autopsy revealed a depressed fracture about the size of a shilling in the right parietal region. Underneath the dura mater was intact. The inner table was fractured. The pia mater and arachnoid were thickened in the frontal region. No meningeal hæmorrhages. Signs of recent hæmorrhages on the frontal cortex. The basal lepto-meninges were not thickened. Hypophysis normal. Considerable distention of the cerebral ventricles and of the aqueduct of Sylvius. Bulb normal. After hardening in formalin macroscopic section revealed increased size of the quadrigeminal region, and especially increase of the inferior quadrigeminal bodies. These presented a small nodule, about the size of a cherry, situated exactly between the aqueduct of Sylvius and the quadrigeminal group. Histological examination revealed a glioma limited to the ventral portion of the corpora. The superior cerebellar peduncles were compressed and separated from one another by the neoplasm.

Apart from the consequences of the injury to the cranium, Lhermitte considers the results of the glioma infiltrating the corpora quadrigemina. The somnolence, excessive appetite and adiposity, combined with the drunken gait, were most striking. The inco-ordination in the patient presented all the characteristics of cerebellar inco-ordination, except in the fact that the disturbances were much more pronounced in the lower than in the upper extremities. The superior cerebellar peduncles were separated, and compressed by the tumour—accounting for the peculiar locomotion and stance of the patient. There were no choreiform movements or athetosis—an argument against the German hypothesis that these movements are due to a lesion of the superior cerebellar peduncles. The hypoacusis occurring in the patient was due to pressure of the tumour on the path of auditory sensations. The absolute integrity of the visual apparatus is noteworthy in the light of the importance of ocular disturbances insisted on by other authors. There was no disturbance of phonation or deglutition.

Lhermitte considers the association of disturbances of co-ordination with auditory manifestations (exclusive of vestibular phenomena) as peculiar to a tumour in this situation. The somnolence and disturbances of the general metabolism are relatively frequent in all intracranial tumours—whatever their situation may be.

Lhermitte is finally led to separate the symptoms of quadrigeminal neoplasms into two groups. One group is characterised by a cerebellar type of inco-ordination with hypoacusis, due to pressure on nerve bundles subjacent to the corpora. The other group is characterised by somnolence, adiposity and polyplagia, probably due to ventricular hyper-distension.

Lastly, the author considers the medico-legal question created by the association of quadrigeminal tumours with trauma. Was it coincidence, or was the trauma an ætiological factor in the creation of the quadrigeminal tumour? Examples are cited to show the relationship of trauma to gliomata in this neighbourhood. Grave concussion is felt with maximum intensity in the region of the cerebral ventricles—especially in the third and fourth. Lhermitte definitely believes in the relationship between trauma and gliomata in the region of the corpora quadrigemina.

J. B. Magennis.

Söderbergh: *Studies in the Neurology of the Abdominal Wall with regard to Muscular and Reflex Segmentation.* "Acta Medica Scandinavica." Vol. LII. Fasc. V.

In this work, Söderbergh gives a synthesis of observations on the question of the innervation of the abdominal muscles and of abdominal reflexes. He states the effects of electrical stimulation of the 5th, 6th, 7th, 8th, and 10th dorsal motor roots. His experiments go to prove that the abdominal muscles are innervated by the motor roots in an entirely segmentary manner; and he controverts Oppenheim's opinion that each segment of the muscles is innervated by all the lower five dorsal segments. The segmentation is not so simple that each muscle segment is provided for by a single root: several contribute, but propably there are one or two principal roots.

The author then draws attention to the motor syndromes of the abdomen. He reports cases to establish clinically the motor symptoms limited to different regions of the abdomen, and distinguishes three syndromes. One case of multiple medullary tumours (15)—all operated—was so exceptional in its evolution that he was able to compare the different clinical pictures of the root or medullary lesions. The upper syndrome consists of a lesion of the 7th dorsal, the middle syndrome of a lesion of the 8th and 9th dorsal, and the lower syndrome of a lesion of the 10th dorsal. The

upper syndrome comprised motor symptoms of the upper third of the lateral wall of the abdomen, and of the rectus above the umbilicus; the middle syndrome comprised motor symptoms of practically the middle third of the lateral wall of the abdomen; the lower syndrome comprised motor symptoms of the lower region of the abdomen, and of the rectus below the umbilicus. The author goes on to describe cases of cord tumours, discussing electrical reactions obtained, and operative and autopsy findings. He discusses the musculo-spinal segmentation of the abdomen, and the effects of irritation of the motor roots. He lays stress on the point that in cases of localised muscular defence, the patient contracts his muscles not so much to protect himself from the pain of palpation, but rather as the result of a kind of reflex. It is a sub-conscious act; we cannot spontaneously produce partial contractions of the abdominal wall. These partial contractions are only understandable on the supposition of a musculo-spinal segmentation. He suggests detailed research to compare the distribution of peritoneal lesions found at operation, with the extent of the defence. We depend too much on disturbances of sensation for the localisation of tumour levels, and not enough on motor and reflex signs, which are more objective than sensory disturbances. The majority of extra-medullary tumours are in the dorsal region. Should we not, therefore, endeavour to make a more accurate diagnosis of the level of the tumour? Semiology is the foundation on which the edifice should be built, when it is a question of making a precise diagnosis.

J. B. Magennis

Vines, H. W. C.: *Anaphylaxis in the Treatment of Haemophilia.* "Quar. Jour. of Med." April, 1920. P. 257.

This paper describes a method of treatment which was found satisfactory in two cases of severe hæmorrhage in hæmophilics.

The first patient, whose personal and family history were characteristic, was admitted to hospital suffering from uncontrolled bleeding from a cut over one eye. Ten c.cs. of normal horse serum, given subcutaneously, produced a temporary shortening of the coagulation time, but this was soon followed by a delay in coagulation. Hæmorrhage, which had been arrested by stitching and tight bandaging, recommenced ten days later. It was feared that a further injection of horse serum might produce anaphylaxis, so, in order to test this, two minims of horse serum were given intradermically. A well-marked local reaction with no apparent general response followed; but no further hæmorrhage occurred from the wound. When the coagulation time was tested it was found to be about normal, and remained so for twelve days. Subsequent intradermic injections produced less and less

local reaction and less marked acceleration of the coagulation time, till finally such injections were without effect, and the time of coagulation was again very much delayed. It was concluded that the patient was no longer anaphylactic to horse serum, and it was decided to sensitise him to sheep serum. Three c.cs. of this were given subcutaneously, after which the coagulation time fluctuated considerably. On the twelfth day an intradermic injection of sheep serum gave rise to a very marked local reaction. The coagulation time fell rapidly to normal, and remained so until the patient was discharged.

A second patient, also with a typical hæmophilic history, was admitted with uncontrolled hæmorrhage from his lip. Ten c.cs. of normal horse serum were given subcutaneously. The coagulation time remained prolonged until the eleventh day, when two-fifths of a minim of serum were given intradermically. The coagulation time fell to normal within twenty-four hours, and remained about this level until the patient was discharged, eight days later.

This method of treatment would appear to be worthy of a further test in the hands of those who are called upon to deal with dangerous hæmorrhage in hæmophilics. It does not interfere with the usual method of treatment; indeed, the intradermic injection is necessary in those cases which have been previously given serum subcutaneously in order to test if a further large injection would be safe.

The method does not promise a cure for hæmophilia, but it offers some hope of tiding the patient over a dangerous period when continued hæmorrhage threatens life.

J. W. Bigger.

McCaskey, G. W.: *Basal Metabolism Determinations in General Internal Diagnosis.* "Jour. Amer. Med. Assoc." Vol. 74. P. 927. April 3, 1920.

McCaskey holds that the basal metabolism test rests on an established scientific basis, and that the Benedict method places it on a practical clinical basis. While this method of investigation involves more than the thyroid problem, yet he thinks that the one important controlling factor is thyroxin, on which the functional activity of the thyroid gland is largely, if not altogether, dependent. The question under investigation is the dependability of fluctuation of the basal metabolic rate as an indication of thyroid activity. This investigator considers that routine determinations of basal metabolism are worth while in the following groups of cases:—(1) All cases of definite goitre, especially if associated with health disturbances; (2) cases with or without goitre, with symptoms resembling closely or remotely those of thyrotoxicosis. The estimation of the toxicity of a goitre as determined by local metabolism is of great importance in considering the

necessity for, and character of, therapeutic measures or in judging of operative risk in thyroidectomy, for this latter increases to an appalling degree when the metabolic rate attains an increase of around 100 per cent. Further, this author is of the opinion that most reliable proof of thyrotoxicosis is an increase in the basal metabolism test. Several cases illustrative of the value of the basal metabolism test in patients suspected of abnormalities of the thyroid internal secretion are given. So far as McCaskey is concerned, the test has passed the experimental stage, and has been assigned a place in his diagnostic armamentarium, although he admits that its precise limitations and scope will only become more closely defined with larger experience.

H. Moore.

Woodbury, M. S.: *A Comparison of Methods for Determining Thyrotoxicosis.* "Jour. Amer. Med. Assoc." Vol. 74. P. 997. April 10, 1920.

The observations made by Woodbury in this study were prompted by a desire to compare the epinephrin chloride test as described by Goetsch, with basal metabolism determinations as advocated by Benedict and Du Bois, in relation to the clinical condition of the patient, the pathologic anatomy of the thyroid after operative removal, and the clinical result of operation. Considering the wide acceptance of increase in the basal metabolism rate as, under the usual conditions, meaning thyrotoxicosis, it seems a matter of importance to discover whether or not so general a conclusion is justified. It is Woodbury's opinion that there is a large group of patients who are in an impaired physical and nervous condition, and who, because of a toxic state of probable thyroid origin, are in need of treatment, and yet whose basal metabolism rate is not increased. It is these latter cases particularly with which the study deals. Excluding five active exophthalmic cases and three markedly toxic adenomata, all of which showed increased metabolism rates of from 20 per cent. to 85 per cent. above normal, there remain 19 non-exophthalmic adenomatous cases in whom operation was performed, and who were thought to be suffering from varying degrees of thyrotoxicosis; none of these 19 cases showed increase in the metabolic rate. Of these 19 cases 11 are available for analysis; these 11 cases appear to be definitely thyrotoxic; they all gave a positive epinephrin chloride test, were definitely benefited, with one exception, by operation, gave thyroid glands which, on pathological examination, appeared to be compatible with the diagnosis of thyrotoxicosis, and yet showed basal metabolism rates within normal limits. He concludes that observation of the rate of basal metabolism alone should not be regarded as a sufficient criterion in determining the presence or absence of toxic states associated with the thyroid.

Although the evidence thus obtained is of much value in estimating varying degrees of toxicity, it should receive only proper emphasis, the complete study of the patient furnishing the only safe guide. The epinephrin chloride test is more sensitive than that of the basal metabolism rate, but requires even greater safeguards than the latter.

H. Moore.

Stokes, J. H., and Busman, G. J. : *Tubing as a Cause of Reaction to Intravenous Injection, especially of Arsphenamin.* "Jour. Amer. Med. Assoc." Vol. 74. P. 117. April 10, 1920.

The authors for the past two years have been investigating the causes of an arsphenamin reaction observed in their clinic. The reaction was characterised by chill, rise of temperature, nausea, vomiting, diarrhœa, pain in the back and head, and prostration. The reaction would appear in crops, so to speak, and disappear for a considerable period. After much investigation the following conclusions were arrived at :—(1) A certain widely distributed brand of so-called pure gum rubber tubing seems to contain when new, a toxic agent responsible for a definite type of reaction following intravenous administration of arsphenamin, and possibly of alkaline solutions in transfusion media; (2) the toxic substance gradually disappears in the course of a few days from the tubing with use, and is apparently removable in the first instance by soaking the tube for six hours in normal sodium hydroxide solution and rinsing; (3) the toxic property is not destroyed by boiling for one hour, is not soluble in water, and is transmitted to solutions of arsphenamin, neo-arsphenamin and sodium hydroxide merely on passing them through a new tube *en route* from container to vein.

H. Moore.

ROYAL ACADEMY OF MEDICINE IN IRELAND.

President—Sir John Moore, M.D.Dubl., F.R.C.P.I.
Secretary—J. A. Scott, M.D., F.R.C.S.I.

SECTION OF PATHOLOGY.

President—T. T. O'Farrell, M.D.
Secretary—J. H. Pollock, M.D.

Friday, March 5, 1920.

Perithelioma of the Scalp.

The President (Dr. T. T. O'Farrell) showed a case of perithelioma of the scalp.

Lymphangioma of the Abdominal Wall.

Sir Arthur Ball and Professor O'Sullivan showed a case of lymphangioma of the abdominal wall removed from a woman aged twenty-two. The tumour was present from birth, and gave no trouble till a few months before removal, when it began to increase in size, and became tender. It was removed by Sir A. Ball, who thought it nævoid in character, but found it impossible to remove entire, and a large part was left behind. It was adherent to the skin, and involved the sheath of the rectus. Clear fluid, as though from a cyst, escaped. It had a large arterial blood supply, but not many veins.

Professor O'Sullivan said it was originally reported as a lipoma, but on a further examination spongy tissue was found mixed with fat. This tissue was made up of large thick-walled channels very close together, with numerous blood-vessels. The angiomatous tissue was embedded in fat.

The President asked if the tumour were connected with the urachus.

Mr. H. Stokes asked if these tumours were malignant, and how they were to be recognised. What was the prognosis in view of the large pieces left behind in this case?

Dr. Boxwell stated that lymphangiomata of the skin were met with. They were raised above the skin and were colourless: otherwise they resembled moles.

Dr. O'Farrell said he brought to the Academy some years ago a lymphangioma of the dorsum of a finger. It was associated with epithelioma.

Sir Arthur Ball replied that the tumour had no connection with the urachus. He operated on the case on account of the pain and tenderness, which were probably due to tension in the lymph spaces. He would like to know whether it would become malignant.

Professor O'Sullivan.—The tumour was throughout of the same tissue—thick-walled vessels of very definite structure. There were no collections of cells of any kind, and no epithelial proliferation. Some years ago he examined a lymphangioma, also of the abdominal wall, sent him by Sir Charles Ball, which was also non-malignant.

Tubercular Sequestrum of Femur.

Mr. Pringle.—The specimens were removed from a lady aged sixty-five, with a history of chronic rheumatism in her knee (two years). She developed a swelling over the external condyle and was seen by a physician who incised the swelling. When seen by Mr. Pringle there was a sinus discharging pus, and the condition was diagnosed as tubercular in origin. X-rays showed a cavity in the external condyle. At operation it was decided to excise the knee. The patellar pouch was found studded over with tubercles. He was able to shell out the remains of the sequestrum.

Professor O'Sullivan had a section taken through part of the articular cartilage and through a portion of the sequestrum which had become a little loose. The surrounding bone was very cancellous, and the narrow cavities full of fat; the thickness of the trabeculæ was normal. The sequestrum was typical tubercular tissue, giant cells, &c., being found. The tissue of the surrounding capsule was not tubercular, but towards the sequestrum were layers of granulation tissue which were unquestionably tubercular. The bone trabeculæ in parts were thicker than in the healthy bone due to layers laid on by nucleated bone-corpuscles.

There were two views on the origin of these sequestra:—(1) König's, that the artery to the particular part of bone was blocked by tubercular tissue; the bone then died and became separated. (2) Watson Cheyne found that there was evidence of sclerotic change going on in the sequestrum. If there was evidence of previous sclerosis of bone in the sequestrum, the theory of König has no foundation. He did not give any satisfactory data in support of his theory. He did not explain why a portion of the bone should become separated.

Professor O'Sullivan thought the separation of the bone was due to the blocking of an artery—these sequestra were wedge-shaped, but he did not see why the blocking should take place at the beginning of the process. The artery got blocked in the middle of the process. The bony capsule was healthy in character, not tubercular.

Mr. Pringle did not agree with Professor O'Sullivan's view. He brought two femurs from the museum in Trinity College, Dublin, one of which was labelled "Acute Necrosis," and the other not labelled except "Removed for Disease of the Knee-joint." The first femur had an eburnated surface at the articular end, and he considered this tubercular with secondary infection in the shaft. The second bone showed the same eburnated condition. If the condition is one of infarction, as König states, the area would be wedge-shaped. In his case it was circular, and he considered that there was not a blockage of the artery, but a dissemination of the tubercular process through all the branches of the artery. If the patient had high resistance, the tubercular process would become localised to that patch, and the appearance which Professor O'Sullivan described in his section would be found.

Dr. O'Farrell said the majority of cases he had seen did not contain sequestra, but merely caseous material. He thought the bones from the museum were not tubercular, but septic.

Dr. Keegan thought it strange for a patient of sixty-five to develop such a condition. Did the condition start in the synovial membrane, and was the cartilage at the head of the tibia involved? What was its condition as shown by *x*-rays? He thought there was a septic infection, and that the sequestrum subsequently formed.

Mr. Pearson had seen the *x*-ray, which suggested a large area of caries, but no sequestrum. If the sclerotic changes began in the sequestrum it should have been denser, but, instead, it appeared lighter. He was absolutely against the infarct theory.

Dr. O'Farrell thought it might have begun as tubercular arteritis without blockage of an artery.

Professor O'Sullivan said that if Mr. Pringle's theory was correct the condition should be much more common, whereas it was quite rare. There was no evidence of septic processes having occurred. He did not say that clots suddenly blocked the artery, but that it was occluded by tubercular processes. The wedge-shaped form was, of course, more common.

Mr. Pringle did not see why there should be eburnation if the dry bones exhibited were merely septic. There was no infection of the tibia or its cartilage. He had not brought down the *x*-rays, as this was a Pathological not a Surgical Section. In one view the *x*-rays showed a suggestion of a sclerotic patch with an area of fibrosis surrounding it.

Four Cases of Tricuspid Disease.

Dr. Wigham said that disease of the tricuspid valve was rare as compared to aortic and mitral disease. The four hearts shown appeared within a week at the Pathological Laboratory in Trinity College.

1st was a case of Dr. Parsons', *post-mortem* by Dr. Stokes. Child aged six years; scarlatina three months previously; came to hospital moribund and with lung trouble. The heart was large, and the lungs collapsed. There was recent early infection of both mitral and tricuspid valves.

2nd was a case of Dr. Speares' in the Adelaide. A girl aged twenty, who came in with broncho-pneumonia and pleurisy. She had a history of rheumatism, but not of heart disease. This heart also showed early acute tricuspid infection.

3rd, a case of Dr. Rowlette's in Mercers. He had treated the patient, a woman, some time before. She collapsed in the street, and was brought to the hospital moribund. Both feet were gangrenous, and only one kidney at all healthy. There was old chronic disease of both mitral and tricuspid valves.

4th. Dr. Boxwell's patient, a girl aged twelve years, was admitted to hospital with heart lesions of some years' duration. She did fairly well for some time, but in the end collapsed, and failed to respond to any treatment, and died slowly of failing compensation. She was never known to have any specific illness. Her mouth was very septic. There is great chronic pericarditis, old-standing mitral stenosis with superimposed acute disease and erosions of the chordæ tendiniæ. The condition on the right side was very similar. On one of the eroded chordæ tendiniæ was a knot on which was growing a vegetation.

The President said that the mouth was the origin of the infection in Dr. Boxwell's case. The tonsils were also often at fault, and in many cases of fevers the infective organisms could be got from the tonsil in pure culture. He had a case of a lady with muscular pains who had not slept for a long time; she had a high temperature and was moribund. Blood culture was negative, but from a throat swab he isolated streptococci, and after two or three doses of an autogenous vaccine her temperature came down and she recovered completely.

What was the infecting organism in Dr. Wigham's case? He wondered why the right side of the heart was not more often affected. In a series of 305 cases of heart disease only 28 had lesions of the right side of the heart. Had blood cultures been done in these cases?

Sir John Moore said he had been taught by William Stokes that the left side of the heart was most often affected. Right side lesions are usually congenital, because venous blood was less

likely to set up infection than arterial blood. The epithelium of the left side was supposed to be more delicate. He suggested that perhaps tricuspid disease was not really so rare, and that it was overlooked at autopsy.

Dr. Rowlette said that the right side should be more often affected than it was because infection should come in by the systemic circulation rather than by the pulmonary.

His case, aged forty-five, had rheumatic fever 25 years ago, and had attacks of dyspnœa every spring, but she was not much troubled till summer, 1919, when he thought her a mitral case with failing compensation. She left hospital in a few weeks, and continued her work as a charwoman, but came up to the house surgeon, who saw her over a long period. In the heart was a large mass of laminated old-standing clot, and in one lung there were a large number of new infarcts, some the size of an egg. His experience of rightsided disease was not very great, but he thought that both sides were always examined at autopsy.

Dr. Nesbitt wished to know what the heart findings were in these cases. It was very hard to know when tricuspid regurgitation was occurring. A case might show no signs, but a tracing should show a great wave where one would expect a gush of blood due to tricuspid regurgitation.

Professor O'Sullivan said it was not uncommon to find the tricuspid valve affected as a secondary lesion to disease on the left side. The dominating thing was pressure. There must be more organisms in the venous than in the arterial blood.

Dr. Wigham said that Dr. Rowlette had called his case rheumatic, but what was rheumatism? The original source of infection was still hidden. In Dr. Speares' case streptococci were found in the spleen; his case also had a history of rheumatism.

Dr. Boxwell said the clinical signs of tricuspid regurgitation were very rare. He did not do a blood culture. The patient's temperature only once rose to 100° F.; it was usually subnormal. Streptococci were sometimes found in cultures from the teeth.

Two Cases of Intracranial Growth.

Dr. Boxwell's first case was that of a man who was injured by a billiard cue rest. He was operated on, and a piece of necrosed bone was removed from the skull in June last. He returned in October with vomiting and headache. In November, as he was going blind, he was seen by Dr. Maxwell, and an abscess was suspected, and another operation was done when great intracranial tension was found which resulted in a hernia. No abscess was found. The patient died, and a lump was found on the left side of the cerebellum. This was tuberculous, as was also a lump in the dura. The patient never presented any clinical signs of cerebellar disease.

The second case was an ex-soldier, who suffered in Palestine from bronchitis. He was suffering from bulbar palsy when seen, the 5th, 6th, and 7th nerves being involved. His voice was gone; swallowing was affected (9th and 11th), and the tongue was paretic. The night before he died he jumped out of bed saying: "My God, I'm blind." On examination of the brain, the tumour—a glio-sarcoma of the fourth ventricle—was almost in the middle line, and was presumably pressing on all the vital centres.

Dr. O'Farrell had had a somewhat similar case. The patient died suddenly, and the fourth ventricle was found full of blood. There was a tumour in the same position as in Dr. Boxwell's case. There were no signs of arterio-sclerosis.

Mr. Henry asked if there was polyuria in the second case.

Dr. Boxwell.—The urine was normal in all respects.

Muscle in Gas Gangrene.

Dr. A. Stokes read a paper on the above, in which he stated that clinically the gas spreads very much further than the infection. When the thigh was affected the gas had sometimes spread up to the umbilicus. It was important to note that the gas in wounded tissues was sometimes air.

Dr. O'Farrell asked how artificial gas gangrene was produced.

Professor Stokes, replying, said he used an organism isolated by him in 1918, and twice subcultured. (Pasteur's original strain was isolated fifty years ago, and was a vibrio.) He used a Welchii for class demonstration. It had been twice subcultured, and killed a guinea-pig.

Gas formed later than œdema, and the condition should be called gas œdema as it is called in France and Germany. Gas is formed after the death of the muscle has taken place. *X*-rays did not show the condition till it was too late to be of any use. Air emphysema was very common in wounds.

OBITUARY.

ADAIR, Edward William Mahaffy. Died June 4, 1920. Born at Omagh, Co. Tyrone, 1865. Educated at Coleraine, Dundalk Grammar School, and the Carmichael School of Medicine, Dublin; L.R.C.P. & S.I., 1887; Medical Officer, Waddingham District, Caistor Union. Died at Kirton-in-Lindsey, Lincolnshire.

BARCROFT, Alfred Ernest Jaffray. Died June 5, 1920. Educated at Royal College of Surgeons, Ireland; L.R.C.S.I., 1884; L.R.C.P.I., 1885; Hon. Capt., R.A.M.C. Died at Armagh.

COWE, Samuel McCutchan. Died June 19, 1920. Born 1854. Educated at the Ledwich School, Dublin; L.A.H. Dub., 1880; L.R.C.P. & S.I., 1882. Died at Terenure, Co. Dublin.

FAYLE, Harry. Died June 1, 1920. Born at Birr, King's Co., February 25, 1865. Educated at Galway Grammar School and Trinity College, Dublin; B.A., 1886; B.A.O., B.Ch., M.B., 1887; M.D., 1892, Dub. Served in the Boer War as Captain in the Cape Medical Staff Corps (Medal and Clasp); afterwards Railway Medical Officer, Jeppestown; Captain, British East African Expeditionary Force. Served in German East Africa, 1916. Awarded Military Cross. Died at More Park, Birr.

FINUCANE, Thomas Dawson. Died June 11, 1920. Born 1823. L.A.H. Dub., 1855; L.F.P.S. Glasgow, 1861; M.D. St. Andrew's, 1881; formerly Resident Medical Officer and Registrar, Coombe Hospital, Dublin. Died at Blackrock, Co. Dublin.

GOODWIN, John Killaly. Died June 14, 1920. Born at Limerick, May 22, 1831. L.R.C.S.I., 1855; appointed Assistant Staff-Surgeon, Army, December 5, 1855; Surgeon-Major, October 12, 1870. Served in China, 1857-1860; New Zealand, 1863-1866. Retired December 19, 1876. Died at Highwick, Newton Abbot.

HATCH, Richard. Died May 31, 1920. L.R.C.S.I., 1881; L.R.C.P.I., 1882. Died at Pembroke Road, Dublin.

INMAN, Arthur Walter Patrick. Died June 17, 1920 Born at Clonmel, May 20, 1854. Educated at Trinity College, Dublin; B.A., 1876; M.B., B.Ch., 1878, Dub.; Surgeon-Captain, March 6, 1880; Surgeon-Major, March 6, 1892; Lt.-Col., March 6, 1900; Colonel, July 22, 1905; was Physician and Surgeon, Royal Hospital, Kilmainham, from August 7, 1899, to October 1, 1902. Retired January 6, 1909. Re-employed during the war from April 1, 1915. Died at Kingstown.

KERR, Elias William. Died June 8, 1920. Born at Grangegorman, Dublin, October 26, 1849. Educated at Royal School, Dungannon and Trinity College; B.A., M.B., M.Ch., 1872; M.D., 1889, Dub.; L.M.R.C.P.I., 1872; late assistant Medical Officer of Crossroads Dispensary District, Dunfanaghy, Co. Donegal, and at Kinlough, Co. Leitrim. Died at South Lodge, Dorchester.

MacLAUGHLIN, Francis. Died June 9, 1920. Educated at Queen's College, Galway; L.R.C.P. & S. Edin., 1880; M.D., 1881; R.U.I.; J.P. for the City of Londonderry. Died of pneumonia at Londonderry.

SCOTT, Ralph Robert. Died June 1, 1920. Born at Kiltegan, Co. Wicklow, February 5, 1832; L.R.C.S.I., 1853; L.K.Q.C.P.I., 1861; M.K.Q.C.P.I., 1879; appointed Assistant-Surgeon, 46th Foot, July 28, 1854; subsequently served with the 8th Dragoons, the 8th Hussars, the 93rd and 80th Foot; Surgeon-Major, March 9, 1867; retired August 14, 1876; served in the Crimea and the Indian Mutiny. Died at Bath.

SCOTT Samuel Jervois. Died May 27, 1920. Educated at the Royal College of Surgeons; L.R.C.P. & S.I., 1896; Medical Officer, Bessbrook Spinning Company; late Resident Surgeon, Drumcondra Hospital, Dublin; Hon. Capt., R.A.M.C.

SKELLY, Charles. Died June 23, 1920. Educated at the Royal College of Surgeons, Ireland; L.R.C.P. & S.I., 1894; formerly Medical Officer, Oldcastle Workhouse; Captain, R.A.M.C. Died at 19 Percy Place, Dublin.

SMYTH, Frederick Charles. Died June 16, 1920. Born 1879. Educated at Queen's College, Belfast; M.B., B.Ch., B.A.O., 1903; M.D. 1908, R.U.I.; D.P.H., R.C.P. & S.I.; late Anæsthetist, Royal Victoria Hospital, Belfast; Assistant Physician, Ulster Hospital for Women and Children. Killed by motor accident.

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ORIGINAL COMMUNICATIONS.

SOME OF THE CLINICAL SYMPTOMS OF APPENDICITIS COMPARED WITH THE LESIONS FOUND AT OPERATION.[a]

By CHARLES B. MAUNSELL, M.B., F.R.C.S.I.

MR. PRESIDENT, LADIES, and GENTLEMEN, I must apologise for bringing before you such a well-worn subject as appendicitis, especially as I have nothing original to say about it. I do so with the expectation that, in the discussion which I hope will follow my communication, attention may be drawn to these cases in which disease of the appendix has not been recognised, or, if recognised, has not been treated with sufficient respect.

Appendicitis may attack either sex at any age. While it is quite true to say that appendicitis is much commoner between the ages of five and forty, yet we must remember that at no age, from birth till death, can the

[a] Read in the Section of Medicine, March 26, 1920.

possibility be ignored that abdominal symptoms may be due to appendicitis.

Experiences at operation lead one to make the statement that appendicitis never occurs in a normal appendix. There is always some developmental fault—most commonly in connection with the distribution of the peritoneum in the iliac fossa and lumbar region. This fact makes it probable that if one member of a family suffers from appendicitis other members are likely to suffer also. The truth of this supposition is borne out by experience; and, indeed, we may class disease of the appendix as an hereditary ailment. Cases of appendicitis are always divided into chronic, acute, subacute, and recurrent.

Chronic inflammation is always the first occurrence, although symptoms may not be recognised until a more or less acute attack has supervened. According to the clinical symptoms we may divide the chronic cases into three sub-divisions. In the first, various gastrointestinal, genito-urinary, or other symptoms are accompanied by symptoms and palpable signs in the region occupied by the appendix. In the second, the general symptoms are accompanied by localising symptoms, but not by palpable signs. In the third, the general symptoms are not accompanied by either localising symptoms or by palpable signs. At operation one will find in all these cases evidences of developmental defect, either in size, shape, attachment, or position of the appendix, absence or shortness of the mesoappendix, dilated and mobile cæcum, arrested descent of the cæcum, over-descent of the cæcum, enteroptosis, "Lane's kink," "Jackson's membrane," &c. In some of them the conditions present would allow things to enter the appendix which should not do so; in most of them the conditions present would prevent proper emptying of the appendix. In all cases one will find some of the results of chronic inflammation—*i.e.*, bands, adhesions, thickening, atrophy, stricture, presence of "fæcal concretions," distension with mucus or muco-pus. In some cases there may be an

actual tumour, due to septic inflammation, tubercle, actinomycosis, cancer or sarcoma. In many cases one will find coincident inflammatory disease of the intestines, stomach, pancreas, gall passages, &c.

From the standpoint of the practical surgeon, it is useful to remember that a diseased appendix is often accompanied by a diseased stomach, or gall-bladder, &c., and that the converse is equally true. From the standpoint of the physician, the chief interest would be in an attempt to separate what we may call the reflex gastric cases, due to disease of the appendix, from cases of actual gastric or duodenal ulceration, whether secondary to chronic appendicitis or not. I would suggest the following as helpful in making a diagnosis:—(1) Gastric ulceration is a comparatively rare condition; disease of the appendix is extremely common. (2) The symptoms of ulcer are distinctly periodic; those of appendicitis are more continuous. (3) Pain and discomfort in ulcer are present chiefly when the stomach is empty, or some time after the ingestion of food. The pain is usually relieved by food or alkalies. (4) Patients who say that they vomit everything, or who suffer from "bouts of uncontrollable vomiting," or who vomit bile, are most likely not suffering from ulcer. (5) Hæmatemesis or melæna are decidedly suggestive of ulcer; but it must be remembered that in many cases in which these signs are present no ulceration can be demonstrated by an operator. (6) X-ray examination is of the greatest help in the diagnosis of ulcer, of reflex gastric disturbance, or of chronic appendicitis.

It is useful to remind ourselves that the appendix is only one source of reflex, gastric disturbances, &c. There are many others, ranging from the brain to the prepuce, so we may give permission to a few people to retain their appendices. Attacks of acute appendicitis may vary in severity, from "fulminatory" to "abortive," but, while bearing this in mind, we may divide them into two distinct classes with a third or hybrid class, in which the symptoms alter from one class to another during the

course of an attack. The cause of this change will be obvious when we consider the pathology of the two distinct classes.

The first class we may call "primarily inflammatory." We need not waste time elaborating the symptoms, as these are the ordinary cases of appendicitis with more or less gradual onset, elevation of temperature, proportionate increase of the pulse-rate, abdominal pains, tenderness and sense of resistance over the inflamed area. There is usually no difficulty in making a diagnosis, except in very young children or in patients in whom the appendix is placed in very unusual situations, such as the left iliac fossa, under the liver, or deep down in the true pelvis, &c. I have operated upon two cases of appendicitis occurring in patients with complete transposition of viscera, and on several in whom the cæcum and appendix lay in the upper abdomen. Retrocæcal and intrapelvic appendices are too common to puzzle anybody of much surgical experience. These "primarily inflammatory" cases do not often suffer from complications, and rarely prove fatal, even when treated on "expectant" lines.

At operation the usual signs of acute inflammation are found, with more or less definite evidence of preceding chronic inflammation, but the most important thing is the absence of signs of complete obstruction of the lumen of the appendix.

The second class we may call "acute obstruction of the appendix." The clinical symptoms are very typical, and the course of the illness is almost as regular as night following day, unless the patient happens to be one of the lucky ones, in whom the obstruction becomes freed, and the attack aborts or takes on the characters of the inflammatory type. The onset is absolutely sudden; there is severe abdominal pain, of griping character, which is referred to the umbilicus or epigastrium. Vomiting is a very constant symptom, and is often distressing. In some cases these symptoms show short remissions. The temperature is normal, and the pulse may be infrequent, normal, or slightly increased in rate from the distress of

vomiting. During the first few hours there are generally no localising signs in the abdomen. Within about twelve hours all the symptoms disappear, and the patient may even get up and go to his work; however, within the next twelve hours he begins to doubt that all is right. He feels sick, he has abdominal pain, and now the pain is chiefly in the lower abdomen, and perhaps more on the right side than elsewhere. The temperature is elevated and the pulse-rate is increased, and continues to increase steadily. The abdomen is tender, and the muscles are resistant over the right iliac fossa or over the lower abdomen or over the entire abdomen. To put it shortly: there are signs of acute peritonitis, either localised, spreading or diffused according to the presence or absence of protective adhesions.

In some cases the symptoms of the first stage are not so well marked, and may be considered by the patient or his friends as of no importance. This is quite a common occurrence when dealing with a child, and the case may be presented to us, for the first time, as a case of diffused septic peritonitis of unknown origin.

If we operate during the first stage we will find that the lumen of the appendix is completely occluded by a concretion, an inflamed stricture, a kink or a band, and that the portion of appendix distal to the obstruction is tense, and acutely inflamed. If we operate during the quiescent period, we will find that the obstructed appendix has become gangrenous, in whole or in part, and that the lower abdomen is full of peritoneal exudate, which is usually turbid.

If we do not operate until the last stage, the operation is no longer really one for appendicitis, but for varying degrees of advanced septic peritonitis.

Let us now consider the clinical stages in the light of the findings at operation. The afebrile period, with pain and vomiting, is caused by acute obstruction of the appendix, and the, usually ineffectual, spasmodic efforts at relief. The quiescent period is due to the fact that the greatly increased virulence of the dammed-back septic

material has completely paralysed or caused actual gangrene of the appendix. The recrudescence of symptoms in the last stage is due to the establishment of acute septic peritonitis.

The symptoms of the first stage are very similar, and are often mistaken for the symptoms of strangulated hernia or other form of intestinal obstruction, or perhaps for those of acute gastritis. To this class of appendicitis belong most of the wrong diagnoses, cheerful prognoses and tragic emergency operations.

SOLITARY CYST OF THE KIDNEY.

By ADAMS A. McCONNELL.

Large, solitary cysts of the kidney are of interest, in that they present neither clinical similarity nor pathological uniformity, whilst their ætiology is largely speculative.

This communication on the subject contains something of clinical interest, little of pathological fact, and nothing at all of speculation.

The patient, the mother of sixteen children, noticed that she was getting thinner for the past year, but that the only indisposition noteworthy in the course of her sixty years excited no comment and occasioned no anxiety. In December, 1919, she had a slight chill, with pain in both lumbar regions. The pain started behind and radiated towards the front of the abdomen. That on the left side lasted longer, and was of greater severity than that on the right. There was no vomiting during this attack, but the patient felt weak and lost her appetite.

On admission to hospital under Dr. Purser's care, in January, 1920, examination showed an extremely pendulous abdomen, with the recti muscles widely separated. On the left side of the abdomen was a tumour about the size of a cocoanut, firm, but giving the sensation of a tense cyst rather than a solid mass.

The centre of the tumour was on the level of the umbilicus. There was slight mobility, but it was impossible to raise the growth to a higher level in the abdomen.

On the right side a similar swelling was similarly situated, but it could be completely reduced under the right ribs in the recumbent position to return immediately when the patient assumed the erect posture. She volunteered the information that on occasion she passed a large amount of urine, and then the swelling on the right side disappeared.

The urine was normal, with the exception of a slight amount of albumen.. Cystoscopic examination showed a normal bladder. I considered the case to be one of double hydronephrosis associated with general visceroptosis, due to the extreme laxity of the abdominal wall. This laxity being brought about by over-distension, sixteen times repeated inside twenty years. As it was possible to replace and retain the right kidney, I determined to explore the left fixed one in order to restore it to a position which would permit of a belt being worn. In order, however, to gain some more preoperative data I passed a catheter into the left ureter, and injected thorium solution. The ureter showed a right-angled bend at its junction with the pelvis, but the outstanding result of the pyelogram was the proof that there was no hydronephrosis.

The pelvis contained only 110 minims (6.6 c.c.) of fluid, and its somewhat distorted outline suggested a tumour of the kidney.

We then considered the possibility of a hypernephroma, but the complete absence of hæmaturia with a tumour of this size made such a condition appear unlikely. Our preoperative diagnosis, therefore, was a cystic tumour of the kidney, not a hydronephrosis. I exposed the kidney by a lateral incision, and found that it was ectopic in position, the blood supply coming off the aorta below its usual level, and the kink of the ureter being due to the distortion of the lower pole of the kidney itself. A cyst as large as the fœtal head occupied the centre of the kidney.

I passed a hand across to the right kidney, and found it small, irregular and adherent to the liver, the enlarged pelvis being empty at the time. As the right kidney was definitely hydronephrotic and of questionable value as the sole organ of urinary excretion, and as there was a considerable amount of normal renal tissue on the left side, a nephrectomy was out of the question and an excision impossible with safety, I therefore decided to perform a conservative operation, and simply marsupialize the cyst. I opened it, and removed a large amount of dirty, hay-coloured fluid, some of which was immediately examined, and found to contain pus and pieces of necrotic tissue. No organisms were present and no organisms grew.

The wall of the cyst was about a quarter of an inch thick, and was formed of dense fibrous tissue without any epithelial lining.

The cyst was stitched to the abdominal incision and dressings applied. There was a profuse watery discharge from it for twelve hours, the dressings and bed being soaked with fluid, after which period there was no further profuse discharge.

A mixture of glycerine, alcohol and iodoform was injected into the cavity once a day for a week, after which the discharge diminished to a few drops in the 24 hours. The patient left hospital in three weeks with a small sinus.

Large, solitary cysts of the kidney are rare, only 63 cases having been reported. They are somewhat more frequent in women than in men, and in the right than in the left kidney.

The cyst is usually situated at one or other pole of the kidney. The size varies within wide limits: in one case the cyst practically filled the abdominal cavity, and weighed 16 lbs., but the majority are about the size of an orange.

The content of the cyst is usually clear, serous fluid, but sometimes the fluid is turbid, bloody or caseous. Suppuration is very rare. In the majority of cases the thin cyst wall was formed of fibrous tissue without an

epithelial lining, but in some such a lining was present, the cells being either flattened or cuboidal in form.

The only relatively constant change in the renal tissue was slight interstitial nephritis in the immediate neighbourhood of the cyst wall. The pathological evidence has not yet led to a satisfactory theory of causation. There is no reason to believe that these solitary cysts are congenital, and, as far as my knowledge goes, in but one case—and that one a cyst of small size—was there any definite indication of retention. In it there was dense sclerosis of a papilla with incrustation of calcium phosphate. This condition seemed to be responsible for retrodilatation of the tubules and cyst formation (Caulk, "Annals Surg.," June, 1913). The paucity of symptoms renders a diagnosis difficult, and in the majority of cases the diagnosis has been made at operation. In this case the connection of the tumour with the left kidney was established, the absence of hydronephrosis proved, and a cystic tumour of the kidney prognosticated, but to differentiate between a hypernephroma and a true cyst on palpation alone is, I think, impossible. I must confess that the consistency of the tumour accorded, in my mind, just as much with a hypernephroma which I had seen as with a cyst of the kidney which I had not seen. Of course, the absence of haematuria, which is common in the former and very rare in the latter, pointed to a cyst.

The ideal treatment is excision of the cyst and suture of the kidney. Such a proceeding was impracticable in this case, for the pelvis of the kidney would have been encroached upon, and the state of the other kidney was too precarious to take risks.

The last remark applies also to nephrectomy. Moreover, in many cases the loss of function is small, and the sudden imposition of the total excretion on the other kidney may lead to a uræmic fatality.

Marsupialisation was eminently satisfactory in this case, though in 33 per cent. of the cases in which it has been done an intractable fistula resulted.

ACUTE PNEUMOCOCCAL LOBAR PNEUMONIA.

By HENRY F. MOORE, M.D.

(*Continued from page* 232.)

The Prognostic Value of Laboratory Findings.

The studies of the staff of the Hospital of the Rockefeller Institute for Medical Research, New York, have demonstrated certain facts which are of value in estimating the probable severity of any case of pneumonia, and which are helpful in prognosis.

I. *Relation of the Type of Pneumococcus causing Lobar Pneumonia to the Resulting Mortality Rate.*—Study of a large number of cases has shown that the mortality is not the same in each type of pneumococcal pneumonia. It will be seen from a study of Table V. that the mortality from lobar pneumonia due to Type I. pneumococcus is about 25 per cent., Type II. about 28 per cent., Type III. over 50 per cent., and primary cases of Type IV. give a mortality of 14 per cent. These mortality rates are given without reference to the ages of the patients.

Thus, the outcome of a case of lobar pneumonia is influenced by the type of the infecting pneumococcus, and the determination of type gives some information of prognostic value. Pneumococci of Types I. and II. are responsible for about 65 per cent. of all cases of lobar pneumonia, and thus the majority of deaths from lobar pneumonia are due to these two types. It should be remembered, however, that "there is considerable variation in the severity of the individual cases due to the different types of pneumococci" (Cole) (6). Table V. also shows the incidence of the various types of pneumococci causing lobar pneumonia.

TABLE V.

INCIDENCE OF SEROLOGICAL TYPES OF PNEUMOCOCCI IN CASES OF LOBAR PNEUMONIA AND MORTALITY IN CASES NOT SPECIFICALLY TREATED (10).

Type of Pneumococcus	Incidence		Mortality		
	No. of Cases	Per cent.	No. of Cases	Died	Per cent. Died
I.	195	36.0	123	31	25.2
II.	155	29.0	107	30	28.0
III.	45	8.4	37	21	56.0
IV.	139	26.0	133	22	14.0
Total	534	—	400	104	26.0

II. *Specific Precipitin Reaction in Urine.*—Attention has been directed above to the soluble substance which is formed by pneumococci in broth cultures during their active period of growth; this substance may also be detected in the urine and blood of pneumonia patients. The quantity of the substance present in the urine seems to vary with the intensity of the infection, and may be used for estimating the severity of the disease. Dochez and Avery (13) found it in the urine in 52, or 65 per cent., of 80 cases of lobar pneumonia due to the three "fixed" types of pneumococci: they were unable to demonstrate it in 14 cases of respiratory disease due to organisms not pneumococcus.

Further, the mortality among the 52 cases which gave a positive urine reaction was 36.5 per cent., whereas the mortality of the cases which gave a negative urine reaction was but 3.5 per cent. Hence, it would appear that the prognosis is more serious when the precipitin reaction in the urine is positive.[a] If the degree of the reaction in-

[a] Quigley (Jn. Inf. Dis., 1918, XXIII., 217), however, does not agree.

creases from day to day the outcome is usually fatal unless, in Type I, this result is prevented by the administration of the type homologous antipneumococcus serum.

III. *Pneumococcus Bacteræmia.*—The more recent studies indicate that the death-rate is higher among those cases of lobar pneumonia in which the blood culture is positive than among those in which pneumococcus bacteræmia does not exist. Of 448 cases of lobar pneumonia studied in the Hospital of the Rockefeller Institute pneumococcus was obtained from the blood in 136, or 30.3 per cent. (2). In the 136 cases with positive blood cultures the mortality was 55.8 per cent., whereas, in 312 cases with negative blood cultures the mortality was only 8.3 per cent. In 49 cases in which Type II pneumococcus was obtained from the blood the mortality was 73.4 per cent.; in 16 cases of Type III infection with positive blood culture the mortality was 100 per cent.; 21 cases with Type IV pneumococci in the blood gave a mortality of 52.3 per cent. (compare the general mortality of the various types in Table V.). Further, the more intense the bacteræmia is numerically, the more serious the outcome. An increasing bacteræmia indicates a serious prognosis. The technique of blood culture has been described above.

IV. *Leucocytosis.*—Lobar pneumonia is usually accompanied by a leucocytosis with a relative and absolute increase in the number of polymorphoneuclear leucocytes. Chatard (11), in a study of 577 cases of pneumonia occurring at the Johns Hopkins Hospital, Baltimore, from 1889 to 1905, found a mortality of 55.8 per cent. in 34 cases having a leucocyte count of 10,000 or under. Where the leucocytosis count was between 10,000 and 30,000 there was a progressive decrease in the mortality. Chatard states "the mortality steadily decreases with an increase in the number of leucocytes and reaches a minimum at from 20,000 to 60,000." In the Hospital of the Rockefeller Institute, 463 cases were studied from the viewpoint of the relation of leucocytosis to mortality (2). The mortality was 65.5 per cent. when the leucocyte count was under

10,000; 23.7 per cent. when it was between 10,000 and 20,000; 14.4 per cent. when it was between 30,000 and 40,000; and 11 per cent. when it was above 50,000. Thus, it is seen that the degree of leucocytosis bears some relation to the outcome of the case. When the temperature becomes normal the number of leucocytes in the blood rapidly decreases in uncomplicated cases. A leucocytosis continuing after a crisis or lysis has occurred, especially if accompanied by a high percentage of polymorphonuclear cells, suggests a complication with pus formation, such as empyema. A continued leucocytosis with a relative decrease in the number of polymorphoneuclear cells and a relative increase in the number of lymphocytes with a slight increase of the number of eosinophiles suggests delayed resolution, or serum sickness if the patient has been treated with antiserum.

Treatment with Antipneumococcus Serum.

As soon as the etiological and type diagnosis has been made by the methods outlined above, treatment with antipneumococcus serum Type I may be instituted in each case of pneumonia due to Type I pneumococcus, except in children, in whom the prognosis is very good and the administration of the serum difficult, or in patients almost moribund, or in adults seen late in the disease and apparently recovering. Treatment with an antipneumococcus serum of empyema and pericarditis, due to pneumococci, is probably without much value. Often where a case of lobar pneumonia is mild, the physician may be inclined to postpone the serum treatment for a day or two. This may be considered unwise, because frequently the pathological process in the lung advances insiduously with little clinical evidence of such progression for some days, and then, suddenly, the patient begins to show evidence of severe intoxication. Antipneumococcus serum is obtained from horses by the intravenous inoculation of these animals with at first heat-killed, and later living, virulent pneumococci. The heat-killed pneumococci suspended in salt solu-

tion are injected every day for six days, then an interval of seven days is allowed, after which the six-day course of inoculation is again started. When the antibody content of the serum reaches a certain point, three-day courses of living pneumococci are given with seven days' intervals between each course. This is continued until a potent antiserum is produced. The heat killed bacterial sediment from about 50 to 100 c.c. of a 16-hour broth culture is used for the first courses. When, later, living pneumococci are given on three successive days, the bacterial sediment from 30 to 300 c.c. of a 16-hour broth culture is used, the dose increasing as the immunisation progresses. In this way the present author, working at the Hospital of the Rockefeller Institute, has produced within seven weeks after the first dose a potent antipneumococcus serum Type I which will, when diluted 1 to 400, agglutinate Type I cultures, and 0.2 c.c. of which will protect white mice against intraperitoneal infection with 0.1 c.c. of a virulent 16-hour broth culture of pneumococcus Type I (minimum lethal dose 0.0000001 c.c. giving 30-100 colonies on plate culture). These should be the standard set for all Type I antipneumococcus serum to be used therapeutically. For details of the method the reader is referred to the original publication (12). Antipneumococcus serum is now produced in America by various commercial biological houses, and all such commercial serum on the market must conform to a standard set by the Hygienic Laboratory, Washington, D.C. This standard was made necessary by the appearance on the market of poor products. Frequently, commercial serum contains 0.5 per cent. trikresol or chloroform as preservatives. The present author, while at the Hospital of the Rockefeller Institute, produced antipneumococcus serum from horses on a large scale for a considerable time without the use of preservatives, and rarely had trouble with contamination during the process of handling the antiserum or from loss of potency during storage for up to twelve months at 2° to 4° C. The intravenous use of serum containing 0.5 per cent. trikresol is apparently harmless provided the

serum be injected slowly (13); chloroform may be easily got rid of before injection.

Serum Reactions.—It is well known that after the intravenous administration of foreign serum, especially in large amounts, certain "reactions" take place on the part of the patient. These reactions are caused by the proteins of the serum, and are independent of its antibody content. The reactions are three in number:

(1) *The Anaphylactic Reaction.*—This occurs here in individuals who are hypersensitive to horse serum. It develops about twenty minutes after the intravenous injection has started and when the patient has received about 20 to 50 c.c. of the antiserum. The symptoms are dyspnœa and flushing of the face, followed by cyanosis, sweating, cough, general anxiety, and perhaps a widespread urticarial rash. Severe reactions of this nature occur very rarely, and if the precautions to be described below are taken, it is probable that severe anaphylactic shock will never be seen. At any rate, it is absolutely certain that, with these precautions, the very remote possibility of an anaphylactic reaction should in no way prevent the administration of the serum. In order to avoid the anaphylactic reaction the patient is questioned for a history of previous injections of immune serum for diphtheria, tetanus, meningitis, &c., and concerning symptoms of asthma, as such persons are most likely to be sensitive to proteins and thus to react to the injection. Further, an intradermic skin test is performed in the following way: (1) The skin of the forearm is gently cleansed with soap and water or alcohol, care being taken not to cause irritation; with a small syringe and a fine needle, about 0.2 c.c. of sterile diluted horse serum (normal or immune), diluted 1 to 10 with salt solution, is injected intradermically (not subcutaneously), so that a small white wheal about 3 mm. in diameter results. The injection of a similar quantity of salt solution is made about an inch or two distant as a control. The wheal produced by the salt solution usually disappears within a few minutes. If the patient is not hypersensitive to horse serum the one produced by the serum injection disappears almost as rapidly. On the other hand, if the

patient is hypersensitive to horse serum, usually within fifteen minutes an urticarial wheal develops at the site of the serum injection, surrounded by an area of erythema.

The lesion reaches a maximum development in about an hour and disappears in a few hours. As a routine, it is advisable to administer 1 c.c. of antipneumococcus or advisable to administer 1 c.c. of sterile antipneumococcus or normal horse serum subcutaneously in the case of pneumonia patients, even though the intradermic skin test is negative, because occasionally a patient giving a negative skin test may show symptoms of hypersensitiveness on the injection of large amounts of serum. The subcutaneous injection of 1 c.c. of serum will desensitize most patients in about six or eight hours. This desensitizing dose should be given immediately after the skin test has been done, and meantime the type determination can be made. Occasionally 1 c.c. of serum given subcutaneously will not prevent the development of the anaphylactic action. If the intradermic test is positive, indicating that the patient is hypersensitive to horse serum, and if the infection is due to Type I pneumococcus, in which case the patient may receive serum treatment, a more thorough method of desensitization must be used. The plan followed at the hospital of the Rockefeller Institute consists of the injection of small amounts of serum subcutaneously at half-hour intervals, doubling the size of the dose with each injection, beginning with 0.25 c.c. diluted in salt solution. If no reaction follows the injection of 1 c.c. subsequent doses are given slowly intravenously at half-hour intervals, beginning with 0.1 c.c., and the dose of serum is doubled at each injection. If a general reaction occurs, the injection should be suspended for two or three hours and then resumed, starting with the same dose that produced the reaction. When a total of 25 c.c. have been given, 50 c.c. may be given after an interval of four hours, followed by 90 c.c. six or eight hours later. This desensitization of a patient is a time-consuming process, but is very rarely necessary (about 1 per cent. of patients). The first dose of serum usually produces complete desensitization in a hypersensitive patient. An anaphylactic reaction

is usually relieved by the subcutaneous injection of 0.6 c.c. epinephrin solution (1 to 1,000) or of 0.5 mg. of atropin sulphate, or both.

(2) *Thermal Reaction.*—This is another type of reaction which may follow the intravenous injection of serum, usually appearing five minutes to three-quarters of an hour after the injection has been given. The signs are, generally, shaking, a chilly sensation, cyanosis and slight dyspnœa; the temperature rises from 1° to 3° F. within an hour or two and then falls, often to normal, with profuse perspiration. The temperature often remains normal, but in many cases again rises after several hours. Treatment of the thermal reaction consists merely of the application of heat to the extremities, warm drinks and reassurance of the patient.

(3) *Serum Disease.*—This occurs six to fourteen days after the administration of the serum, the attack lasting a few days to a week or more. Sometimes the attacks recur at intervals of a few days. The main symptoms and signs are skin rashes and pruritus, fever, œdema, enlargement of superficial lymph glands, stiffness and pain in the joints, particularly the temperomaxillary; occasionally there is a headache with nausea and vomiting. These may appear singly or in combination. Serum sickness may be mild or severe, but so far as is known it is never serious, and leaves no permanent bad effects. The leucocyte count in serum sickness is from 15,000 or 20,000; the relative number of lymphocytes is usually increased to 30 or 40 per cent., and that of the eosinophiles 3 to 7 per cent. Treatment is symptomatic; aspirin or sodium salicylate and sodium bicarbonate usually give relief of the joint troubles. The following lotion is recommended by the Rockefeller Hospital for the skin lesions and pruritus:—

	Gm. or c.c.
Acidi Carbolici	2
Calaminæ	4
Zinci Oxidi	8
Glycerini	12
Liq. Calcis	16
Aquae ad	120

At night the hypodermic injection of 0.6 to 1 c.c. epinephrin will cause the urticaria to disappear, so that the patient may sleep for several hours without being disturbed by the itching.

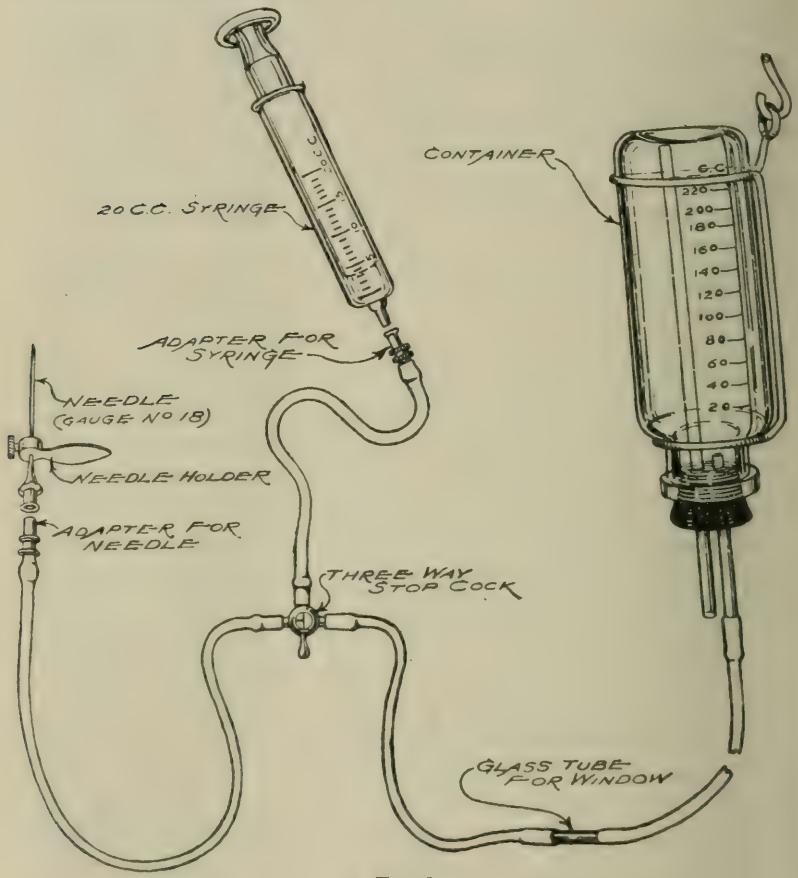


FIG. 1.

Technique of Administration of Antipneumococcus Serum as carried out in the Hospital of the Rockefeller Institute.—The serum is given by the intravenous route; the dose for an adult of average weight is about 80 to 100 c.c. of serum, diluted with an equal volume of sterile 0.85 per cent. salt solution made from freshly-distilled water (glass-distilled). The administration of this dose of

serum is usually repeated about every eight hours until the temperature becomes normal.

Apparatus Necessary.[a]

1. Sterile glass container in wire basket for holding mixture of antipneumococcus serum and sterile 0.85 per cent. salt solution made from freshly-distilled water.
2. Rubber tubing, four feet long; and a three-way stop-cock.
3. Short piece of glass tubing for a window in tubing leading from container to stop-cock.
4. Rubber stopper with double holes through which are thrust two pieces of glass tubing. One tube is long enough to reach nearly to the bottom of the container, and through this air enters the container when the latter is inverted and the serum flows out. The other shorter glass tube forms the outlet for the serum.
5. Two sharp needles (about No. 18 gauge) and needle holder.
6. Two 20 c.c. syringes.
7. One 2 c.c. syringe with hypodermic needles.
8. Dressing forceps.
9. Adapters for syringe and needle.

All this apparatus is assembled, and, if not previously sterilised in an autoclave, is boiled for twenty minutes in a covered dish. The apparatus is shown in the accompanying sketch (Fig. 1). When one is ready to make the injection, the serum, warmed to about 100° F., is transferred to the container by means of a sterile pipette, avoiding the transfer of the small amount of sediment which is usually present at the bottom of the bottle (care having previously been taken to prevent stirring up this sediment by shaking). An equal volume of equally warm 0.85 per cent. salt solution is added, and the cork is inserted in the con-

[a] The apparatus may be obtained from Fannin & Co., Ltd., Grafton Street, Dublin.

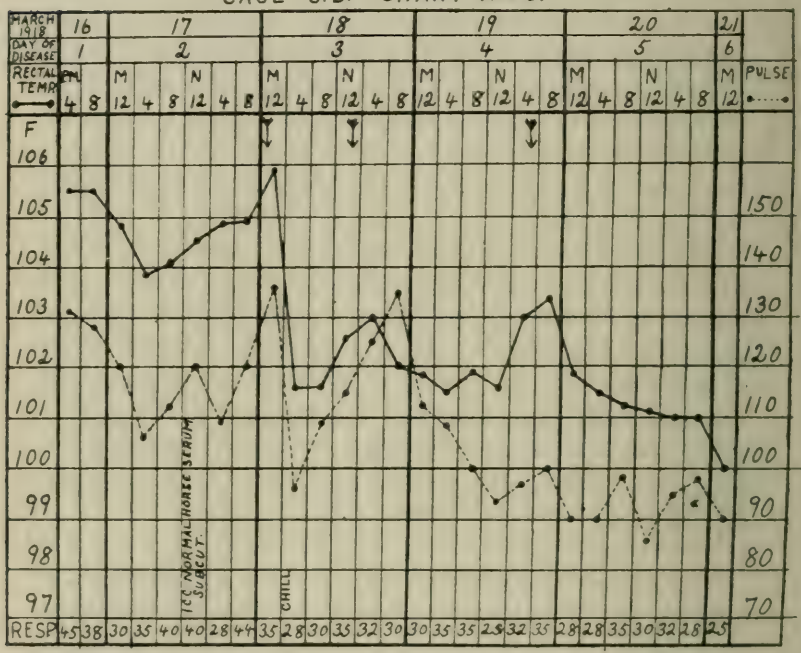
tainer and fixed firmly by strapping; the bottle is inverted and suspended by the wire basket to the hook of an irrigating stand, about two or three feet higher than the patient as he lies in bed. The container is then surrounded by two hot water bags containing water at a temperature of about 110° F. in order to keep the serum about 98° F. as it flows into the vein. Cold serum may give rise to thermal reactions on the part of the patient. The serum is then allowed to fill the system of the tubes (the connections having been made) and the needle is introduced into a vein (which is usually at the bend of the elbow, and which has been rendered prominent by pressure above), the overlying skin having been previously cleansed with iodine and alcohol. Blood culture may be taken at this time. The delivery tube from the stop-cock is then connected with the needle by the needle adapter and the serum is allowed to flow into the syringe by gravity; when the syringe is three parts full the serum is injected very slowly into the vein through the three-way stop-cock. In this way the first 10 or 15 c.c. of serum is given slowly, its injection taking from ten to fifteen minutes. During this time the patient is carefully watched for the signs of a reaction (increased rapidity of the pulse or respiration, dyspnœa, pallor, cyanosis, or urticarial eruptions). If such sign appears it is well to stop the injections for five or ten minutes to see if they increase in severity; usually they rapidly disappear, and the injection can be resumed. While the injection is discontinued the needle can be kept free from clots by the slow injection of salt solution through the stop-cock with another syringe. After the first 15 c.c. of serum has been given without a reaction appearing, the remainder of the injection may be given more rapidly—namely, in from ten to fifteen minutes. Aseptic precautions should be employed throughout, and local anæsthesia may be used in nervous patients. Subsequent injections of serum need only consume about fifteen to twenty minutes. There is often a slight elevation of temperature within an hour after the first injection, and this may be followed by a marked fall. If the temperature continues low, and the patient's condition is good,

no further serum is necessary. The patient, however, should be carefully watched, and the temperature taken every two or four hours. If, having fallen, the rectal temperature rises to 102° F., or over, or if it does not fall within eight hours to 102° F., a second dose of serum should be given. If, after the second dose of serum, the temperature does not fall to 102° F. in eight hours, another dose should be given, and this should be repeated as often as is necessary. The patient should be constantly observed and the treatments given during the night as well as during the day, whenever necessary. If after several doses of serum the temperature does not fall, the presence of complications such as empyema or otitis media should be considered. Each dose of serum is about 80 to 100 c.c., diluted with an equal volume of sterile salt solution. The average total amount of serum required for each case is about 240 c.c., and the average number of injections is about three. More than this amount of serum, however, is not infrequently required—one case treated at the Hospital of the Rockefeller Institute received as large an amount as 1,500 c.c. Charts and brief notes of two cases treated with serum are here given by way of illustration.

Case I.—J. D. (Chart No. 1), male, age 40, chronic alcoholism. Consolidation of left lower lobe; rusty sputum containing numerous Gram positive diplococci, lanceolate, showing moderately-sized capsule. Patient appeared quite ill. Diagnosis:—Acute lobar pneumonia. Leucocyte count, 24,000. Blood culture lost. Intradermic serum test negative. Specimen of sputum injected into a white mouse and diagnosis of infecting organism, pneumococcus Type I made within ten hours. After the first intravenous injection of 80 c.c. antipneumococcus serum Type I patient had a "thermal" reaction, and the temperature dropped to 101.6° F. (rectal). It subsequently rose, and two further serum injections were given, after the last of which the patient's condition became quite good. No increase of lung involvement under serum treatment. Total amount of antipneumococcus serum given, 240 c.c.

Rockefeller serum used. Mild serum sickness appeared seven days after last dose of serum. Patient made a good recovery, and was discharged on the twenty-first day after the onset of the disease.

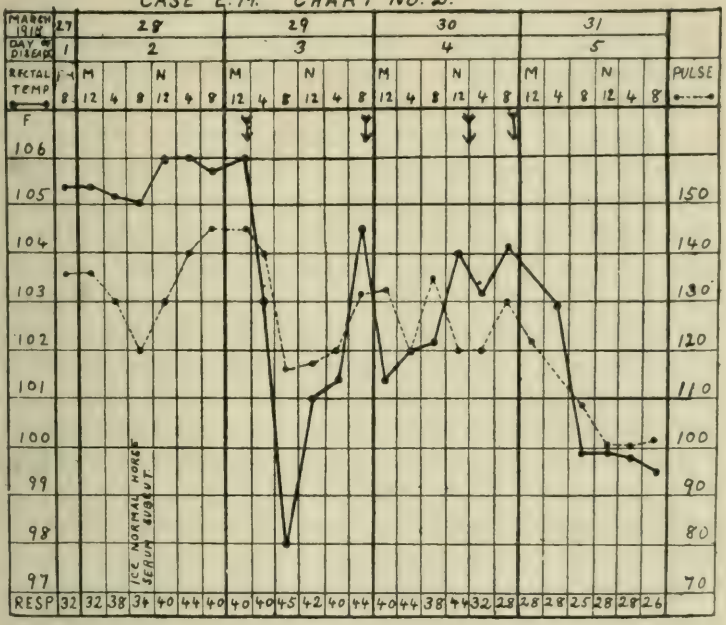
CASE J.D. CHART NO. 1.



ARROW DENOTES INTRAVENOUS INJECTION OF 80 CC ANTIPNEUMOCOCCUS SERUM (TYPE I)

Case II.—E. M. (Chart No. 2), female, age 16. Consolidation of right lower lobe; rusty sputum containing numerous Gram positive lanceolate diplococci, showing moderate-sized capsule. Patient appeared seriously ill, and was delirious. Leucocyte count, 30,000. Diagnosis: Acute lobar pneumonia. Blood culture positive. Intradermic serum test negative. Specimen of sputum injected into a white mouse and diagnosis of infecting organism, pneumococcus Type I, made within twelve hours. After the first intravenous injection of 75 c.c. of antipneumo-

coccus serum Type I, temperature dropped to 98° F. (rectal). Temperature and pulse rate subsequently rose, necessitating three further serum injections, after the last of which pulse, respiration rate and temperature dropped to about normal, and general condition was excellent.



ARROW DENOTES INTRAVENOUS INJECTION OF 75 TO 80 C.C. ANTIPNEUMOCOCCUS SERUM (TYPE I).

No increase of lung involvement under serum treatment. Total amount of antipneumococcus serum given, 315 c.c. Rockefeller serum used except for second dose, which was a commercial product and not of full potency. Mild serum sickness appeared four days after last dose of serum. Patient made a good recovery, and was discharged on the twentieth day after the onset of the disease.

It is not designed to enter into the general treatment of acute lobar pneumonia in this place. It may be generally

stated, however, that about 3,000 c.c. of water, or more, should be given to the patient per day unless there is œdema from cardiac or renal insufficiency; abdominal distention should be treated appropriately; a reliable standardised form of digitalis should be used as a routine and started early, so that the patient will be partially digitalised should necessity arise; the patient should have an abundance of cool, clear, fresh air, if possible on a verandah, but should, of course, be shielded from inclement weather and chilling; finally, oxygen inhalation should be used in cyanosis.

Results of Antipneumococcus Serum Treatment (Type I.)—In a small number of cases the result of a single injection of antipneumococcus serum is almost dramatic, the fall in temperature within a few hours suggesting a crisis (Chart No. 2). In the majority of patients, however, the initial improvement which is almost always evident after treatment with antipneumococcus serum Type I may be followed by a rise in temperature and a return of symptoms, but the condition of the patient practically never recedes to what it was before the serum treatment. In still other cases there is little immediate effect as seen in temperature or pulse. In almost all cases, however, the patient's general condition improves subjectively and objectively in a short time after the administration of the serum. Further, with few exceptions, in cases of lobar pneumonia Type I there is no extension of the pulmonary lesion following the administration of serum. Again, the administration of Type I serum prevents pneumococcal bacteræmia, or, if bacteræmia is present, causes removal of the pneumococci from the circulating blood. In almost every case of Type I pneumonia treated in the Hospital of the Rockefeller Institute with antipneumococcus serum in which the blood culture was positive before the administration of the serum, one dose of serum, or at most two, has resulted in the blood becoming sterile.

Unquestionably this fact is of great importance in judging the efficacy of the serum. Following the administration of antipneumococcus serum, provided sufficient has been

given, there appear in the patient's blood antipneumococcus immune bodies which naturally appear only at or about the time of defervescence. Moreover, if the specific precipitin reaction in the urine was positive, it often becomes negative during the serum treatment. Antipneumococcus serum therapy, however, seems to have no effect on the rate of resolution or on the development of complications. The most important evidence of the efficiency of antipneumococcus serum therapy must be based upon mortality statistics. Since this method of treatment of lobar pneumonia has been perfected by the staff of the Hospital of the Rockefeller Institute enthusiastic reports have appeared not only from several of the best hospitals in America, but also from base hospitals of the United States Army. In the Hospital of the Rockefeller Institute up to October, 1917, 107 cases of lobar pneumonia Type I were treated with Type I antipneumococcus serum (2). Of these, eight died, giving a mortality of 7.47 per cent.; whereas, the mortality amongst 123 cases not so treated was about 25 per cent., the latter cases being in the Hospital of the Rockefeller Institute and elsewhere. Of 105 cases treated in the Hospital of the Rockefeller Institute blood cultures were positive before treatment in 38 per cent.; therefore, we may conclude that these cases included a large number of severe infections. Of the eight fatal serum-treated cases at the Hospital of the Rockefeller Institute one, having recovered from the pneumonia, died on the sixteenth day from the onset of the disease following a pulmonary embolism; one, treated late in the disease, suffered from numerous complications, and finally died on the fifty-fourth day from a general streptococcus infection; one had a tuberculous involvement of both lungs; in one, treatment was started on the fifth day, and the patient died on the sixth; and one case was admitted on the sixth day, had a pneumococcal bacteræmia of 300 colonies per 1 c.c. of blood, but lived under serum treatment until the twelfth day. In 1916, Major Nichols, of the United States Army, treated with serum 63 cases of Type I pneumonia occurring among soldiers in El Paso, Texas, with a

resulting mortality of 8 per cent.; whereas, 18 untreated cases gave a mortality of 39 per cent. (14). Major Nichols concluded that "no patient with Type I infection who dies without the early intravenous administration of large doses of Type I serum can be said to have had the best treatment. Major Russell L. Cecil, of the United States Army, makes the following statement (15) :— 1. All pneumonia cases should be typed. 2. Serum should be given in all Type I cases. 3. Serum should be given early in the disease. In general it may be stated that the earlier in the disease the serum is administered the better is the result.

From the foregoing it must be concluded that antipneumococcus serum therapy is the best form of specific treatment at present available for acute lobar pneumonia due to Type I pneumococcus.

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Appendix.—A study of 60 cases of acute lobar pneumonia in the Dublin hospitals by the writer gave the following results:—The general mortality, irrespective of age, was somewhat lower than in America—namely, 22 per cent. The incidence was greatest in Group IV.—namely, 33 per cent. The incidence of Type I was 20 per cent. The mortality from Type I was only 8 per cent., Type II 40 per cent., and Type IV 18 per cent. If these figures are borne out by further investigation it is doubtful if treatment with antiserum should be recommended *as a routine* in this country for Type I cases. The full figures will be published later. The study here alluded to is a part of an investigation being carried out for the Medical Research Committee.

REVIEWS.

Bodily Changes in Pain, Hunger, Fear and Rage. An Account of Recent Researches into the Function of Emotional Excitement. By Walter B. Cannon, M.D., C.B.: George Higginson Professor of Physiology in Harvard University. New York and London: D. Appleton and Company. 1920.

During the past four years there has been conducted in the Harvard Physiological Laboratory a series of investigations concerned with the bodily changes which occur in conjunction with pain, hunger, and the major emotions.

The result of these investigations is now presented in this volume in an orderly and readable manner, and so simply that even the non-medical reader will be able to appreciate the conclusions arrived at, and also, to some extent, the methods employed.

Readers of Crile's work, "Man, an Adaptive Mechanism," will be already familiar with some of the ideas and facts now detailed, and will the more readily realise the masterly pioneer work of the present author.

Cannon was induced to undertake this series of studies largely owing to his observations on the variations in the movement of the digestive canal, depending on the emotional state of the animals under observation. He gives an account of these variations, and then analyses briefly but adequately the "sympathetic" nervous distribution (using the term in its widest sense) to the viscera. From this he proceeds to a discussion of the part played by the adrenals in emotional states, and points out the utility to the animal mechanism of the changes brought about.

Further studies on other glands follow, but it is unnecessary to refer to these in a brief review.

Throughout, one is struck by the ingenious nature of the experimental methods employed.

The work, as a whole, is both interesting and entertaining, and throws a new light on many familiar facts. It reveals, to some extent, the complex physiological processes which underlie the psychic phenomena of everyday life.

Physiology and National Needs. Edited by W. D. Halliburton. London : Constable & Co. Pp. 162 + v.

It is said that Napoleon lost the battle of Waterloo owing to his over-indulgence in baked potatoes on the previous evening. The story may or may not be true, but there seems to be little doubt that, in our times, the fall of Kut was hastened by a comparable ignorance of physiology. To quote Professor Hopkins : " The severe sufferings which were undergone during the siege . . . might never have occurred if the authorities responsible for the equipment had had real belief. . . . in the importance of antiscorbutics." The fall of Kut and the terrible march that followed are ancient and unhappy history now, but the organisation that sent men out on a severe expedition and neglected to provide for them is still with us.

We are told they had lemon-juice with them, and in spite of it they developed scurvy. But the lemon-juice was probably of a vintage that never knew the lemon, and as an antiscorbutic was worse than useless.

Into a book of a hundred and sixty pages, Professor W. D. Halliburton has collected six lectures delivered last year at King's College, London. The lectures are by some of our greatest living teachers of physiology, and deal with the great part played by that science during the recent war.

The lectures are in the popular style, inasmuch as that they are free from technicalities; they are full of most

interesting and valuable information; and, as scientific literature alone, are a splendid example of the ability of present-day scientists to express themselves with clearness and. persuasiveness on matters of great national importance.

In the first lecture, "Physiology and the Food Problem," Dr. Halliburton gives an account of how science met the food shortage problem. The second lecture on "Vitamines" is by Professor Hopkins, and is an excellent introduction to one of the most far-reaching physiological discoveries of our times.

A companion lecture, on "Scurvy," by Professor Harden follows, in which the fact that a considerable number of the population are living very close to the deficiency danger line is well brought out.

The fourth lecture, by Professor Noël Paton, on "Physiology in the Study of Disease," brings out the importance of studying disease always with reference to the normal physiological condition. "Few people seem to recognise how much medicine even at the present time is based upon mere empiricism." Professor Paton censures the teachers on the one hand for neglecting the practical applications of the science they teach, and the physicians on the other hand for not demanding this practical training. The lecture will be found most interesting by those who are concerned with the education of medical students as well as those who have to deal with the effects of such education.

Professor Arthur Dendy's lecture, "The Conservation of our Cereal Reserves," is on a subject of which most of us were profoundly ignorant.

The account of the methods of making war on the weevil is amongst the most interesting parts of an extraordinarily interesting book.

The last lecture, "Physical Training and the Open-Air Life," by Dr. Pembrey, gives a good summary of recent physiological teaching on the subject.

Altogether, the book is one in which nearly everybody will find something of value. W. R. F.

Tuberculosis and Public Health. By H. Hyslop Thomson, M.D., D.P.H., County Medical Officer of Health, County Tuberculosis Officer and School Medical Officer for Hertfordshire. London : Longmans, Green & Co. 1920. Pp. 104.

This clearly written, well printed and interesting little book briefly but fairly adequately describes the intimate relation which exists between tuberculosis and public health.

The marked increase in the death-rate from tuberculosis since 1914, not only amongst the general population but also in inmates of asylums, has been noted, and its principal causes concisely explained. Dr. Hyslop Thomson lays stress on the important point, which is frequently lost sight of, that improvements in sanitary conditions aimed at tuberculosis have a beneficial effect on the general death-rate, as well as on infant mortality.

The chapters on Housing, and Milk and Tuberculosis, with the relative frequency of bovine and human types of infection, are useful.

As regards prevention, the author advocates "the segregation in suitable institutions of advanced cases of open pulmonary and non-pulmonary tuberculosis," with compulsory powers of removal when necessary. All tuberculosis and most dispensary medical officers will agree with this.

An important chapter deals with the necessity for early diagnosis, with several useful hints on the subject.

This book can be recommended to all who are interested in tuberculosis.

Advice to Consumptives. Second Edition. By Noel Dean Bardswell, M.V.O., M.D., F.R.C.P. London : A. & C. Black. 1920. Pp. xvi + 153.

In the new edition of Dr. Bardswell's well known book the contents are as useful as when they were written,

but there does not appear to be any new matter. Times have changed since the work was first published, and now with daylight saving and the 46 hour week, except for the professions, there are few who will not have more than "the ten hours or so when they are not working" to get abundance of fresh air.

Cheap shelters or châlets are not of the present, and the food prices mentioned read like a fairy tale in these days.

Conditions have altered so much in the past few years that consumptives thinking of emigrating would do well to inquire further, which, indeed, the author advises.

In spite of these drawbacks the book is a sound guide for "lungers," to use the picturesque Canadian phrase, and will solve many doubts for the anxious patient.

Attitude and Health. By F. F. Roget, a "Privat-Docent" Professor in the University of Geneva. The Chadwick Library. London: Constable & Company, Ltd. 1919. Demy 8vo. Pp. xii + 186.

There is something charmingly novel, refreshing, and naïf about this book. As Sir William J. Collins, K.C.V.O., Chairman of the Chadwick Trust, states in his Preface, "this *brochure* had its origin in a course of Chadwick Lectures delivered in London by Professor Roget in the year 1914. He was the first professor from a foreign country to be invited by the Chadwick Trustees to form one of their panel of lecturers. The conception and method of this course and of this booklet are thoroughly 'Chadwickian.' Professor Roget, like Chadwick, is no doctor, yet he has studied profoundly the fundamental principles of healthy living."

The book consists of three parts. The first treats of climate, alpine and northern; the second, of the air at altitudes; and the third, of sunlight and sunheat. It

should be read by all who propose to winter in the Alps, for its pages are brimful of useful information. The style, if quaint, is admirable, and rivets the reader's close attention. The gallicisms which occur here and there only add piquancy to the wonderful command of the English tongue which the author undoubtedly possesses.

Aids to the Mathematics of Hygiene. By R. Bruce Ferguson, M.D. Fifth Edition. London: Baillière, Tindall & Cox. 1919. Pp. xii + 186.

In the present edition the estimation of the calorific value of foods is introduced, and new examples derived from papers recently set for the Diploma in Public Health take the place of those given in former editions.

The Sympathetic Nervous System in Disease. By W. Langdon Brown. London: Henry Frowde and Hodder & Stoughton. 1920. Pp. xi + 161.

This very fascinating study in applied physiology contains an admirable summary of recent work upon the autonomic system, and is based on the Croonian Lectures delivered by the author in 1918. The constituents of this visceral, or involuntary, division of the nervous system are classified under the headings of Sympathetic and Para-sympathetic, the former connoting the thoracico-lumbar outflow, and the latter the cranial and sacral. The system is then considered in its relation to the endocrine glands, to glycosuria, to digestion, and to diseases of the circulation, and the work of Cannon, Crile, Allen, Keith, and

McCarrison, and many others in widely different fields is adroitly correlated and ably discussed.

The author has succeeded in making the theory that the sympathetic outflow subserves the defensive mechanisms of the organism, while the para-sympathetic contributes to its ease and comfort, so acceptable that the inclusion of discordant results, like those of Stewart and Rogoff, which appear directly to contradict the work of Cannon in connection with the adrenals, awaken the reluctant reader to the fact that the autonomic system has only recently emerged from chaos and might at any moment slip back.

ABSTRACTS OF CURRENT LITERATURE.

GYNÆCOLOGY AND OBSTETRICS.

OBSTETRICS.

LEY, G.: *Primary and Secondary Carcinoma of the Ovary:* A Statistical Record from the Pathological Institute of the London Hospital. "Proc. Roy. Soc. of Med." Vol. XIII. No. 7. P. 95.

LEY, in an exhaustive paper, concludes as follows:—(1) That primary carcinoma of the ovary is of comparatively frequent occurrence. (2) That it frequently arises in a pre-existing benign ovarian cyst. (3) That it most frequently arises in Wolffian relics, situated in the hilum or even in the cortex of the ovary, the carcinoma being usually preceded by a benign cyst. That it next most frequently arises in a pseudomucinous, adenomatous cyst. (4) That the classification into cystic and solid carcinomata is unsatisfactory, those arising in pre-existing cysts being frequently solid, those originally solid becoming cystic as the result of necrosis. (5) The age-incidence of Wolffian carcinomata is a decade later than that of carcinomata arising in pseudomucinous cysts. (6) Wolffian carcinomata are as often bilateral as unilateral. Carcinomata arising in pseudomucinous cysts are rarely bilateral. (7) Malignancy as shown by metastasis is greater in Wolffian carcinomata than in carcinomata arising in pseudomucinous cysts. (8) In both types of primary ovarian carcinoma the peritoneum is the most frequent seat of secondary deposit. (9) Glandular metastasis is common in association with Wolffian cysts. It is rare in association with pseudomucinous cysts. In the material analysed glandular metastasis in association with pseudomucinous cysts did not occur. (10) When the glands are infiltrated, the lumbar and iliac glands are affected first. (11) Staining with mucicarmine is useless as a method of differentiating primary pseudo-

mucinous carcinomata of the ovary from tumours in the ovary secondary to carcinomata of the alimentary tract. Mucicarmine stains the cells lining pseudomucinous cysts and the epithelium of carcinomata of the bowel with equal intensity. (12) Secondary carcinomata of the ovary do not appear to be especially associated with primary carcinomata in any particular site. (13) In more than 75 per cent. of cases, secondary ovarian carcinomata are of no clinical significance. In less than 25 per cent. they are of clinical significance, and in almost all such cases overshadow the primary growth. (14) Fifty per cent. of secondary ovarian carcinomata are bilateral, both where the tumours are of clinical significance and where they are not. (15) The incidence of bilateral secondary ovarian carcinomata is similar, therefore, to that of bilateral primary carcinomata arising in a pseudomucinous cyst. (16) In about 80 per cent. of cases the method of secondary invasion of the ovaries appears to be implantation. The method of invasion in the remainder is divided equally between direct spread and lymphatic permeation or metastasis. (17) The incidence of secondary ovarian tumours of clinical significance is much greater when invasion is either by lymphatics or by contact than when invasion is by peritoneal implantation.

BETHEL SOLOMONS.

MAURY, J. M.: *Results of the Exposure of Animal Ovaries to the Rays of Radium.* "Jour. Amer. Med. Assoc." June 19th, 1920.

MAURY records his findings in the changes brought about in the ovaries of rabbits following the exposure to 50 mg. of radium for twelve hours. This dosage was selected because it is that generally used in cases of so-called idiopathic uterine hæmorrhage, which he now regards as being due to an abnormal condition of the ovarian secretion. This dose is sufficient in women to stop menstruation for several months, and in some instances to establish the menopause permanently. The generally accepted theory is that this result is brought about by the destructive action of the radium on the follicles most advanced in development.

The ovaries of rabbits occupy a fixed position close to the abdominal wall. In this position they are much closer to the radium placed on the skin surface than are ovaries of human beings to radium placed in the uterine cavity. Therefore, they should be more affected by the rays.

Fifteen rabbits were treated, each being given 600 milligram hours, the radium being applied to the skin overlying the ovaries. The ovaries were removed and examined microscopically at varying dates from three to nine weeks after treatment. Seven of the ovaries did not contain follicles of supposedly sufficient size to be affected by the radium; of the remaining 23, twelve contained

large follicles showing no effect of treatment. Two rabbits became pregnant five weeks after treatment. Two others, which were pregnant at the time of treatment, did not miscarry, indicating that the membrana granulosa of the mature follicles, from which the corpus luteum cells are probably formed, was not degenerated.

J. S. English.

Crutcher, H.: *Some Observations on Subperitoneal Enucleation of the Uterus, with a Report of Five Cases.* "Medical Record." Vol. 97. No. 24. P. 1001.

The observations of Howard Crutcher are evidently made with the object of bringing the subperitoneal enucleation before the profession with a view to condemning it. In the short paper, the technique of the operation is described, but the indications for its performance are not given. Crutcher's five cases were as follows: (1) A woman of fifty with incurable procidentia accompanied by "visual indication" of early cancer of the posterior cervical lip. He states that the patient objected to a microscopic examination of the specimen. (2) An unmarried woman of middle age with uterine neuralgia. (3) A middle-aged married woman with a mingled history of actual tuberculosis and suspected uterine carcinoma. (4) A woman of sixty-three with procidentia. (5) A woman with suspected uterine carcinoma. It is to be hoped that the author will give his reasons for selecting this form of hysterectomy for the cure of these complaints.

Bethel Solomons.

Curtis, A. H.: *Chronic Leucorrhœa: its Pathology and Treatment.* "Jour. Amer. Med. Assoc." June 19th, 1920.

Curtis comes to the following conclusions:—(1) Important foci of infection are to be found in Skene's ducts and the cervix uteri. The chief cervical lesions consist in hyperplasia of the infected cervical glands, endocervical granulations and strictures, and erosion of the cervix. (2) Discharges arising from Skene's ducts are relieved by free incision and fulguration of the infected tracts. (3) Chronic leucorrhœa of cervical origin is, in most instances, amenable to cure through dilatation of strictures and treatment with small doses of radium applied at infrequent intervals. The prognosis is less favourable in those cases with chronic cellulitis or uncorrected gross pelvic lesions.

J. S. English.

Doederleim, T.: *Types of Pelvic Infection.* "Surg., Gyn. and Obstet." Vol. XXX. No. 6. P. 599.

The author emphasises the following points:—(1) The classification of pelvic infections into ascending and descending is of practical value with regard to prognosis. (2) Operations for *descending* pelvic infections are rarely connected with grave danger once the infection has reached the quiescent period. (3) It is important to diagnose between gonorrhœal and puerperal infections. The latter is dangerous to life, both immediately and remotely, and operations for relief are fraught with danger. Operations for the cure of gonorrhœal conditions are relatively safe. (4) Judicious conservatism is productive of the best results. Simpson's tabulation of the elective time for operation is quoted.

Bethel Solomons.

Mayo, W. J.: *Conservation of the Menstrual Function.* "Jour. Amer. Med. Assoc." June 19th, 1920.

Stress is laid on the psychic changes brought about not only by removal of the ovaries, but also by removal of the uterus. In malignant disease of the generative organs, radical operation is necessary to save life, with relatively small regard to the future mental condition of the patient; but in cases of inflammatory disease and benign neoplasms, the future condition of the patient, psychic as well as physical, must be remembered. In the case of pus-tubes necessitating removal of tubes and ovaries, after removal, the ovary is sterilised for surface infection in an alcohol flame or by dipping it in tincture of iodine and implanted between peritoneum and abdominal fascia. The nervous and psychic changes of the normal menopause are aggravated in a young woman by operations that check the menstrual flow. "It is probable that menstruation itself has some important endocrine function." The effect on the patient is essentially the same whether menstruation is stopped by removing the ovaries and leaving the uterus, or removing the uterus and leaving the ovaries.

In 741 cases of myomectomy, 7.9 per cent. had subsequent pregnancies; 2.56 per cent. required a subsequent operation, usually hysterectomy, as the patient had been carried along by the myomectomy to the age when the radical operation is of less importance. In many cases of myomatous disease it is not possible to save a uterus that will bear a child, but enough endometrium can be saved to continue the menstrual function. The author has

removed the whole of one wall of the uterus and done plastic restoration, and menstruation has continued normally for years.

In cases of prolonged uterine hæmorrhage without apparent good cause, he advises opening the abdomen and exposing the endometrium through the anterior wall of the uterus. He has performed this operation in twenty-six cases, and been able to save the uterus, finding polypi which could not be reached with the curette, and in other cases small submucous fibroids. There was no trouble in the convalescence of any of these cases.

J. S. English.

Allan, R. Marshall, M.D., F.R.C.S.E.: *The Conservative Treatment of Eclampsia.* "The Med. Jour. of Australia," May 1, 1920.

During his period of office as Assistant Master to Dr. Henry Jellett, many of the cases quoted were under the author's own care; the remainder have been abstracted from the annual reports of Tweedy and Jellett.

The Dublin method of treatment is based on the toxæmic theory.

Maternal Mortality in 86 cases is given as 8.5 per cent. These results are best next to those of Stroganov, who had 839 cases with a mortality of 5.31 per cent. The best figures of the active school are those of Zweifel, whose mortality was 11.25 per cent.

Principles of Treatment.—(1) Delivery as soon as possible. Prolonged labour is bad for the mother, and as soon as the os is fully dilated forceps are applied. (2) Restriction of further metabolism. (*a*)By starvation. During the war it was noted in Germany that eclampsia was the only disease to decrease. (*b*) By morphine, which controls the fits and decreases metabolism and central irritation. (*c*) By gastric lavage. (3) Eliminatory treatment, by rectal lavage, and by inducing sweating and urinary secretion with copious draughts of water.

In severe cases a solution of bicarbonate of soda is injected subcutaneously or intravenously. Venesection is not extensively performed.

Treatment of Special Symptoms.—Fits are controlled by morphine; a general anæsthetic is only administered while the stomach or rectum are being washed out. Cardiac weakness is treated with digitalin and alcohol.

Respiratory Symptoms.—To prevent the slowing of respiration due to morphine, atropin may occasionally be given in conjunction with the former drug. Oxygen should always be kept at hand. At the least sign of respiratory difficulty the patient should be turned on her chest, and her head hung well over the edge of the bed. If she be grasped by her hair, a good control of the head can

be obtained. During convalescence it is of the utmost importance that the patient be kept on very low diet—water only is allowed for at least three days, then albumin water is added, followed by whey, and finally dilute milk and water.

R. E. Tottenham.

Lynch, F. W.: *The Pelvic Articulations during Pregnancy, Labour and the Puerperium.* "Surg., Gyn. and Obstet." Vol. XXX. No. 6. P. 575.

The question as to whether a woman's pelvic girdle expands in pregnancy and labour has been a matter of interest since earliest time. Lynch discusses the question in a paper admirably illustrated by *x*-ray photographs. His only definite conclusion is that the widening of the sacro-sciatic spaces is almost a constant phenomenon.

Bethel Solomons.

Jellett, H.: *A Modification of the Usual Method of Performing Pubiotomy.* "Surg., Gyn. and Obstet." Vol. XXX. No. 6. P. 616.

Jellett describes a modification of the Deoderleim pubiotomy, where, after the initial incision, the periosteum is cut through where it passes off the upper surface of the pubis on to the posterior surface. The point of the blunt needle is then pushed through this opening and downward beneath the periosteum.

Bethel Solomons.

Judd, E. S., M.D., F.A.C.S., Rochester, Minnesota (from the Mayo Clinic): *The Operative Treatment of Vesico-Vaginal Fistulæ.* "Surg., Gynæ., and Obstetrics." May, 1920.

The apparent ease with which vesico-vaginal fistulæ may be closed is sometimes deceiving. The author believes that too often an attempt is made to close the opening before dissecting the bladder wall away from the vagina. The condition which keeps fistulæ from healing of their own accord is owing to the fact that the mucous membranes of the bladder and vaginal walls heal together, thus forming a continuous mucous membrane surface from the bladder to the vagina. The basis of this review is the 78 cases on which operation was performed in the Mayo clinic from January, 1908, to September, 1919. One of the ureters was involved with the vesical fistula in six cases. The author considers it very important to determine the relationship of the ureters whenever it is

possible. In several cases in which the ureter was involved the suprapubic operation was performed.

The vaginal operation should certainly be chosen in all cases of injury near the neck of the bladder. One of the chief steps in this procedure is a long incision in the vaginal wall down to the bladder. Usually the incision is begun immediately below the sphincter muscle, and extended to and through the fistulous opening, after which the bladder is separated from the vagina for a considerable distance. It is easier to begin this dissection as near the cervix as possible, and to bring it forward towards the urethra. Unless this step is thoroughly carried out the chance of a cure is not good. The opening in the bladder should be closed with catgut and the edges inverted. The vaginal incision should be closed with chromic catgut, and all dead space between the bladder and vagina obliterated. A retention catheter is left in the bladder for from eight to ten days.

R. E. Tottenham.

Williams, J. Whitridge: *The Significance of Syphilis in Pre-natal Care and in the Causation of Fœtal Death.* "Bulletin of the Johns Hopkins Hospital." May, 1920.

Soon after taking up pre-natal work the author realised that the recognition and treatment of syphilis early in pregnancy constituted an important and fruitful field for a radical reduction in fœtal mortality. He became convinced that the only way the problem could be approached with any hope of effective solution was by determining the Wassermann reaction in every pregnant woman who registered in the dispensary, and subjecting her to an intensive anti-syphilitic treatment, whenever it was positive. In 4,000 cases under consideration there were 1,839 white and 2,161 black women, in whom a positive Wassermann reaction was present in 2.48 and 16.29 per cent. respectively.

Upon analysing the cause of death in 302 infants under observation it was found that syphilis was responsible for 34.44 per cent.; consequently it is apparent that if it were possible to eradicate syphilis, we should effect nearly as great a reduction in fœtal mortality as by doing away with all the other fœtal deaths due to various accidents at the time of labour, toxæmia and prematurity included. It must be admitted that this unusually large incidence of syphilis can only apply to hospital services with a large black *clientèle*.

R. E. Tottenham

ROYAL ACADEMY OF MEDICINE IN IRELAND.

President—Sir John Moore, M.D.Dubl., F.R.C.P.I.
Secretary—J. A. Scott, M.D., F.R.C.S.I.

SECTION OF OBSTETRICS.

President—E. H. Tweedy, M.D.
Secretary—T. Neill, M.D.

Friday, March 12, 1920.

Circumcision as an Ancient Rite and as a Surgical Procedure.

Dr. Spencer Sheill read a paper on the above. In dealing with the great antiquity of the operation and its origin and objects amongst different races, he drew interesting comparisons between the Mahommedans, Copts, Memons, Boris, and some of the New South Wales and Amazonian tribes, and the Semitic races. He dealt very fully with the rite as performed by the Jews, quoting from Dr. Feldman's book "The Jewish Child." He pointed out that the Jewish operation had not the desirable result of reducing sexual desire, but rather the contrary, as evidenced by venereal disease statistics. This, he stated, was because the inner layer of the foreskin, which was not amputated, but merely stripped down, remained permanently inside out, and this was the layer that carried most of the sensory nerves. Moreover, their thumb-nail method of tearing it down was a serious flaw in aseptic technique, and led to greater inflammation and slower healing. He showed that fertility in the female was directly aided by circumcision, and that when surgically performed, cleanliness reduced venereal disease, and absence of masturbation resulted. He spoke of the non-use of anæsthesia in ritual circumcision, and condemned it as inflicting unnecessary pain on the infant.

The sparing of the artery of the frænum, as usually recommended, was a surgical blunder which led to œdema because the veins were severed.

He thought that in the light of present-day knowledge, seeing around us the manifold miseries resulting from the improper exercise of the sexual passions, circumcision should be advised as a real help to the weakest spot in the human character.

The President (Dr. Tweedy) congratulated Dr. Spencer Sheill on a very interesting communication. He is always interesting, and has touched on this subject in a masterly manner.

Dr. Solomons.—The subject was still contentious and very important for the individual and for the nation. As regards the question of regarding circumcision as an ancient rite or a surgical procedure, it did not matter at all which it is regarded now-a-days. Most educated people ask to have their sons circumcised. He thought it an excellent thing to do for the following reasons :—

1. It helped to prevent hernia due to straining. 2. Later it helped in preventing masturbation. 3. The ordinary schoolboy is not taught to keep himself clean, and if he is taught he thinks too much about himself.

With regard to the question of sexual intercourse, Dr. Sheill says it is made less by removal of the foreskin. He had asked men who have had intercourse before and after its removal, and they said that it made no difference. No anæsthetic was necessary in infants—in fact it was harmful. He had seen many circumcisions done, and Jewish Rabbis did it best. Suction by the Rabbis to prevent bleeding was not now practised, and many of them did not use metal guides. They were very quick; the operation did not take more than two or three seconds, and the child was then bound up. According to statistics by Breitenstein, syphilis was five times more frequent in the uncircumcised.

With regard to reproduction among Jews, all nations liked to reproduce their race, and he did not think this desire was greater among Jews except that when a man died he liked to leave a son behind to mourn for him and to pray for him for a year.

Dr. Neill had had to tie vessels after the performance of the operation by the Jews; but this was rare. He thought cutting of the mucous membrane was against the rite.

The Master of the Rotunda said that he advised the operation when consulted on the subject. He had seen it done very dexterously as a Jewish rite, and had adopted that method—always leaving the mucous membrane behind, but cutting away any which was redundant. With regard to the question of morality, the up-bringing of the child was more important than his state of being circumcised or uncircumcised. He thought the uncircumcised more likely to contract syphilis.

Dr. Tweedy had never satisfied himself that the craze for circumcision was a justifiable one. He remembered when the craze was the removal of tonsils or the appendix. According to the laws of evolution the foreskin must have been greatly needed by the human race or it would not have persisted. The condition is still undergoing evolution, and the design is not yet perfect, and, therefore, phimosis and adhesions were occasionally formed.

The statistics quoted by Dr. Solomons were not worth anything. If the adhesions were broken down and if the prepuce could be well pulled back he thought it would help in the prevention of venereal disease. He was pleased to hear Dr. Solomons say that the operation did not conduce to loss of sexual functions. In fact it had a contrary effect. Nations that practised circumcision did not stand out as examples of morality. He was amused to hear how simple the operation was, because he thought it difficult, and knew of three fatal cases.

Dr. Solomons—From chloroform?

Dr. Tweedy.—One was from chloroform; the others were not. There is often alarming hæmorrhage. Everyone would be able to recall a case in which he was very anxious on account of bleeding. The operation was sometimes followed by an alarming degree of sepsis, though he did not know of a death. Some men circumcised without gloves, and in his opinion this was criminal.

About schoolboy morality. Were there any statistics about immorality among the circumcised and the uncircumcised? He agreed with the Master of the Rotunda that the matter was one of up-bringing and seeing that any diseased condition was removed.

Dr. Sheill's paper had not made him any more keen about the operation than he was before.

Dr. Sheill, in reply, said that as regarded the up-bringing of the child and operative measures in helping morality, the former was, of course, the more important, but if operation were a help to morality it should be done. He failed to see how circumcision helped in the prevention of hernia.

It was true that the attention to cleanliness necessary on the part of the uncircumcised drew too much attention to the genital organs. The early Jews said that no man should touch his body below the umbilicus.

He knew of one rabbi who had removed a slice of the penis with his knife, and it was quite common to operate without a plate. Dr. Solomons said there was no time to infect the patient when the operation took only three seconds. Infection could occur in a much shorter time.

He agreed that the operation was difficult. Gloves should be used, and great care taken as to asepsis. He had had in the last few years re-done several cases done by a well-known practitioner. He thought the Master of the Rotunda was half-hearted and inclined to shift the responsibility to the parents. He thought the responsibility should rest with the medical man for social reasons.

As regards morality, the upbringing of the child should protect him. But when he leaves his father's and mother's hands, and goes to a boarding-school, where one boy may easily get others into bad habits, he should have the operation to protect and help him. He knew of one school in which Dr. Solomons was interested in which this had occurred.

The Jews are not a very moral race. Dr. Feldman's statistics show 1 to 3 Jews to Christians and gonorrhœa 1 to 2. Now gonorrhœa is not congenital, and the percentage of Jews to Christians is very high.

As regards the want of the operation causing convulsions he thought the first adhesion was a normal developmental thing, and that pulling back the prepuce in an infant was bad, as the mother would most likely not continue to do so.

He did not agree with Professor Tweedy's ideas of evolution. If what he stated was true, why had beards persisted? They must have got in the way of the early hunters.

He thought that in the Jewish method the leaving of the inner skin might tend to increase sexual appetite.

With regard to the question of anæsthetics, it was very pitiful to hear the Jewish child's cries, but they are drowned by the chanting of twelve men! A sop was usually placed in the child's mouth five minutes before the operation, and this partly anæsthetised it.

Operation was usually recommended in the first three months, and an anæsthetic was necessary. A C. E. mixture was much better and safer than chloroform.

Tubal Pregnancy.

The following specimens were shown by the Master of the National Maternity Hospital:—

(1) A case of tubal pregnancy removed last August from a woman, aged thirty-six, with a history of fourteen years' married life—two children and five abortions. She had had pain and irregular hæmorrhage since 15th July. Up to that time menstruation had been normal.

On vaginal examination a swelling was felt in the right iliac region which he thought was a tubal pregnancy. At the operation the abdomen was found full of clots. The interest in the specimen was whether one would call it an abdominal pregnancy or a tubal pregnancy. Eight years ago he was sent from Holles Street to see a case which was pulseless and collapsed, and which was supposed to be a threatened abortion. She was taken into hospital and operated on, and it was the same woman with the same condition on the opposite side. He asked for opinions as to whether he should simply have removed the tube and tried to save the ovary, or have removed both tube and ovary—as he did.

(2) The second specimen was removed from a woman aged twenty-eight—four previous labours. She was last unwell on October 10th, 1919; had a slight hæmorrhage in December, and felt life in February this year, when she was seen in the dispensary. Her uterus was too large, and owing to her general con-

dition she was admitted to hospital, when in a few hours she delivered herself of a hydatidiform mole. The question was—Was it a degeneration of this particular part of the placenta, or was it a hydatid mole of a twin pregnancy? The fœtus, placenta, and mole were shown.

Dr. Madill thought the first case one of ordinary tubal abortion, and asked if any full-term pregnancy had taken place in between the two tubal pregnancies. He thought Dr. White was right in removing the tubes. Many people thought it right to take tubes and ovaries if the patient was approaching the menopause.

Dr. Solomons asked if the hydatidiform mole had been examined microscopically, and did its diagnosis rest on this examination?

Dr. Tweedy thought the first specimen was got just as the tube was expelling its contents. Usually in these cases the tube ruptured. It was easy to criticise operations here at the Academy, but he thought it a great pity from the woman's point of view to have lost both her tubes and both her ovaries. It was many years since he had taken out ovaries in ruptured tubal pregnancy; he also left as much tube behind as possible. He was going next day to attend a woman whose tube he removed in part some years ago, since when she had had several children. He was not criticising this special case, but rather the general tendency to remove tubes and ovaries in these cases. In this case it would have been impossible to spare the tube, as it was an emergency operation.

In the second case one-third of the placenta was healthy, but this would not be able to sustain the life of the child for long. No proper observation has been made to see how much placenta has to die before the child died. He had never seen such a large child with such a large placental mole. He agreed with Dr. Solomons that a microscopical examination should be made for fear of malignancy. Was the mole penetrating the sound placenta?

Dr. White, in replying to Dr. Madill, said there were no children after the first tubal pregnancy It was not the urgency of the case that made him take away the second ovary. She had had several children and several abortions, but he was afraid of another tubal pregnancy. He quite agreed that the case was one of tubal abortion. He had not had the second case examined microscopically.

OBITUARY.

ABERNETHY, WILLIAM RUSSELL. Died July 28th, 1920. Born at Londonderry, June 3rd, 1858. Educated at Foyle College, Londonderry, and the Carmichael School of Medicine, Dublin; L.R.C.P., L.R.C.S. Edin.; L.R.F.P.S. Glasgow, 1893; late Medical Officer, Kilmainham Smallpox Hospital, Dublin; Medical Officer, Ballygawley Dispensary District, Co. Tyrone; J.P.

HANRAHAN, JAMES ARTHUR. Died June 26th, 1920. Educated in Dublin; M.B., B.Ch., B.A.O., 1909, R.U.I.; Assistant Hon. Physician, Lewisham Hospital, Sydney; late Medical Officer of Health, Hamley Bridge, South Australia. Died at Kingstown, Co. Dublin.

HENNESSY, DANIEL. Died June 22nd, 1920. Born in County Limerick, March 3rd, 1862. M.D., M.Ch., 1885, R.U.I.; Surgeon-Captain, July 28th, 1886; Major, July 28th, 1898; Lt.-Colonel, July 28th, 1906; retired August 2nd, 1911. Served in Zululand, 1888. Died in Dublin.

DEMPSEY, ALEXANDER. Died July 18th, 1920. Born at Ballymoney, 1852. Educated at Catholic University Medical School and Queen's College, Galway; M.D., 1874, R.U.I.; L.R.C.S.I., 1874; Physician and Gynæcologist to the Mater Infirmorum Hospital, Belfast; Clinical Lecturer and Examiner in Gynæcology, Queen's University, Belfast; Knighted 1911.

DIGBY, CECIL ARTHUR. Died July 7th, 1920. Born in County Dublin, 1858. Educated at Trinity College, Dublin; B.A., M.B., B.Ch., 1883; M.D., 1889, Dub.; L.M.R.C.P.I., 1884; late Assistant Colonial Surgeon, Gold Coast, and Colonial Surgeon and Medical Officer of Health, Logos. Died at Knockane, County Kerry.

KIDD, CHARLES ROLAND. Died July 8th, 1920. L.R.C.P. & S.I., 1918; Captain, R.A.M.C.

McCREERY, BENJAMIN THOMAS. Died July 25th, 1920. Born at Fermoy, August 3rd, 1857. Educated at Trinity College, Dublin; B.A., 1878; M.B., B.Ch., 1879; D.P.H., 1890, Dub.; F.R.C.S.I., 1887; L.M.R.C.P.I., 1879; Surgeon-Captain, March 6th, 1880; Surgeon-Major, March 6th, 1892; Lt.-Colonel, February 5, 1901; retired July 23rd, 1910. Died at Skerries, County Dublin.

MULLIGAN, EDWARD CANNON. Died July 14th, 1920. Born in 1882. Educated at Catholic University School, Dublin; L.R.C.P. & S.I., 1904; D.P.H., R.C.P. & S.I., 1912; Medical Officer, Swinford Union Infirmary and Fever Hospital; Medical Officer of Health, Swinford Rural District. Died at Swinford.

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ORIGINAL COMMUNICATIONS.

MODERN CARDIOLOGY.

By MATHER THOMSON, M.R.C.P.

In spite of all the work done and all that has been written in recent years by MacKenzie, Lewis, and others, the old tradition dies hard, and one still finds a diagnosis of organic heart disease made, the only evidence being a systolic murmur of sorts, or it may be a functional irregularity. The casual and careless way men were marked V.D.H. in the Army was nothing short of criminal. While I was in charge of the heart wards of a hospital in Salonica there was an order that any soldier with a cardiac lesion must be at once transferred to the heart hospital. What was the result? A medical officer in his ordinary routine examination of a patient would find a murmur or some irregularity—would mark the man V.D.H. or it might be D.A.H., and transfer him. In a great many cases the man himself was not aware of his heart, but now his attention became focussed on it, and he believed he

had heart disease, and, given a chance, he soon developed breathlessness on exertion and cardiac pain. The majority of these cases had sound hearts, and, after consultation, these men were discharged from the heart wards at the earliest possible moment, before they became useless as soldiers.

In civil life the experience is similar. I find men drawing high pensions, and honestly believing that they have heart disease, and are not able to work, or they are afraid to try to work, because they are marked V.D.H. on the strength of a murmur. Boys are prevented playing games, men refused for life assurance or their premiums raised—made invalids, and gravely warned of the danger of playing games or running upstairs merely because of a systolic bruit or some functional irregularity.

Systolic Murmurs.—It is wrong to assume that the healthy heart must have the text-book sounds (lup-dub), and that they must be clearly cut and free from murmur. A large percentage of healthy hearts will show murmurs, especially after exercise, without subjective or objective signs. It was astonishing the number of recruits who showed systolic murmurs. I have met them again after they had spent months or years in and out of the fighting line, and their hearts still unimpaired. The other day I was consulted by a lady who was warned thirty years ago not to marry, but to lead a quiet life! In spite of that advice she married, has brought up several children, and now seeks occasional advice, but not for her heart. She has, and has had, all these years a rough systolic murmur at the apex. One could multiply these examples, but we are all familiar with them.

A patient may have during life a systolic murmur of any degree, die of some intercurrent disease, and *post-mortem* show perfectly healthy valves. Cabot remarks that that fact impressed him. Lewis says: "If the murmur be the only sign present and response to effort is good, it implies neither cardiac disease nor impairment."

But even if regurgitation be present (and Lewis says not always can the expert be sure), what then? It is

not the regurgitation which seriously matters, but the fact that the damaged valve indicates the heart has been invaded by disease. There must be something behind the regurgitation, the "something" of which the regurgitation (if it exists) is symptomatic. It is the functional efficiency that matters, not the murmur. Lewis recently gives an example: "A man has a scar on his leg, but who cares for the structural changes? A man may have a scar on his pericardium or valves which never has caused and will never cause inconvenience provided that no medical man discovers the signs of it and misinterprets the significance of it." Does the leg work? How does the heart work?

A Note on Murmurs.

1. *Cardio-Respiratory.*—The commonest. A piece of aërated lung lies between the contracting heart and the anterior chest wall. It is a short whiff, audible during inspiration—it is due to an over-acting heart, and is of no significance. It may be transmitted over the precordium and even towards the angle of the scapula.

2. *Pulmonary Systolic.*—Next most common, and of no importance unless due to stenosis, when the signs will be marked—thrill and cyanosis.

The great rarity of his lesion must be kept in mind, and every other possibility should be gone over before diagnosis is made, and even then it is safe to have doubts.

3. *Aortic Systolic.*—Usually of no importance, and cannot be by itself taken as indicative of stenosis. He is a bold man who diagnosis aortic stenosis, but occasionally I meet with that diagnosis on the strength of a rough, systolic bruit at the aortic area. The usual causes of a systolic murmur are slight roughening of the valves, roughening of the intima of the aorta, and hæmic conditions and aneurysm. Lewis says, to diagnose stenosis you must *first* diagnose regurgitation, and in addition have a thrill, a flat-topped pulse and the systolic blood-

pressure lower and diastolic higher, than if aortic regurgitation were unaccompanied. Cabot agrees, and says that pure aortic stenosis does not exist.

4. *Murmurs at the Apex.*—A murmur at the apex, especially if it be rough and conducted to the axilla or to the angle of the scapula is still held by many to justify a diagnosis of mitral regurgitation—*i.e.*, of organic heart disease. It is well to remember that cardio-respiratory murmurs may be conducted in the same way, and that murmurs may be postural or permanent, or change from day to day, and vary as regards intensity, and *post-mortem* shows no damaged valves.

If regurgitation is certain, that is not a serious matter if the heart muscle is sound.

So far, I have spoken only of systolic murmurs, and shown that for the most part they may be neglected. Diastolic murmurs are, of course, certain evidence of structural organic disease, and although modern teaching has much to say of these, I have no time for comment. The significance of these murmurs is fully recognised, and has always been so, and, fortunately, there is little difficulty in diagnosis, except, perhaps, in the early stages of mitral stenosis.

The Arrythmias.—Here we have a new and clear conception.

1. *Respiratory or Sinus Arrythmia.*—The patient is not conscious of it. It is related to respiration, which becomes evident when he breathes deeply. It is due to vagus stimulation, which, acting on the sino-auricular node (the pacemaker), causes transient slowing of the whole heart. It lasts from childhood up to thirty, and is of no significance. Indeed, MacKenzie considers it a sign that the myocardium is not impaired, and it is interesting to read that the only reference he found to this irregularity was in a book by Corrigan more than fifty years ago, but he (Corrigan) looked upon it as a sign of impairment if not of disease. Neurotics may show it in after life.

2. *Extra-Systoles.*—A stimulus is initiated at some other part of the heart than at the sino-auricular node.

They are a cause of intermittent pulse, which used to be, and is now often, considered a bad sign.

They are very common, and what patients term "palpitations" are usually extra systoles.. They are conscious of the irregularity, and it is the pause that frightens them. The only condition it could be confused with is heart block. If the pulse rate be raised to 140 the premature contractions cease. It is interesting to watch the venous pulse in the neck whilst auscultating. A large auricular wave comes up just after the premature beat of the ventricles. It is due to the attempt of the auricles to force blood into a ventricle already in systole. What of their significance? MacKenzie says: "I have followed cases for many years, and watched them pass through seasons of sickness and stress, and have seen no reason to attach any serious import to this symptom."

A few months ago a young man consulted me about his heart. He had been rejected for life assurance, and the only abnormality shown was an occasional extra systole.

Tobacco, digitalis and digestive disturbances may cause them. When they are associated with other signs, the prognosis depends on these other signs.

3. *Auricular Fibrillation.*—It forms 60 per cent. of irregularities associated with heart failure, and indicates myocardial degeneration. In 1902 MacKenzie described it under the name of "Nodal Rhythm," but it was not until 1910 that Lewis proved it to be fibrillation. It is the only irregularity of the heart with a rate of 140, and once it begins it lasts during life. Its diagnosis and significance are now well known. If the ventricles fibrillate, that means sudden death, and no doubt is the cause in those cases where, *post-mortem*, no pulmonary embolism or fibroid heart is found.

Paroxysmal Tachycardia.—A pulse of 200, without arrythmia or signs of failure. A heart seriously weakened by the ordinary causes of heart disease is never above 160,

therefore its rapidity is an encouraging sign. The patient on his own initiative should give a history of abrupt onset and offset. The rate is uninfluenced by posture, rest or exercise.

This condition is to be distinguished from *auricular flutter*, in which the auricular beat may go up to 300 or more a minute, the ventricle responding to every second or fourth auricular beat. It is usually associated with heart block, and may be forced into fibrillation with digitalis.

Heart Failure.—Modern teaching invites us to banish the "back-pressure theory" and not to talk of "loss of compensation," and here we are on more debatable ground.

Infection has always been recognised as the initial cause of valvular disease, and the sequelæ explained on mechanical grounds. The modern view is that poisoning of the heart muscle is the primary factor, but that if the muscle is not affected, mere regurgitation will not lead to dilatation and hypertrophy. Lewis refers to the old tradition—that the first and last cause of failure is a mechanical defect, and remarks that that tradition is already moribund. "Compensation" is a term which implies a balance between the two factors, hypertrophy and dilatation; and it is not possible clinically to differentiate between the two. "Failure with congestion" is suggested as the more correct term, since that does not imply that dilatation has the upper hand of hypertrophy. Lewis gives an illustration. When the heart dilates during an attack of paroxysmal tachycardia, the venous system is engorged, and, to use the old term, "compensation" is lost. With the fall of the rate the heart shrinks, and relief is experienced—"compensation is restored"—but the relief is not due to compensatory hypertrophy, but to the increased efficiency of the heart.

On the other side, the fact remains that with increased work the cardiac muscle hypertrophies, and there is, of course, a limit to this, and if the load be increased too much, the muscle may fail to respond at all, for, as it has been said, the heart's motto is "all or nothing."

Stokes (1853) said: "The facility of making a correct diagnosis between functional and organic disease is not so great as modern writers led us to believe, and we more often arrive at a just conclusion by instinctive skill, the result of experience and judgment than by communicable rules of diagnosis."

However, knowledge has advanced since that day, and largely by the work of MacKenzie and Lewis, aided by the electro-cardiograph, many problems have been solved, and we know that the guiding principle in prognosis should be based on the functional efficiency of the heart muscle.

Lewis says: "If a man takes exercise without undue discomfort, has no cardiac enlargement, no aortic disease and no mitral stenosis, and his doctor tells him that on that basis his heart is sound, the opinion will be justified in all but exceptional cases, and if a minor blunder is made, it is of less consequence than gravely to warn a man solely on the basis of a systolic murmur."

OBSERVATIONS ON THE EFFECTS OF RADIUM TREATMENT ON WAR INJURIES IN THE NEIGHBOURHOOD OF NERVES AND BLOOD-VESSELS.

By WALTER C. STEVENSON, M.D.

That radium in suitable doses does not injure nerve tissue is shown by the work of Mme. Fabre and Dr. Paul Touchard on five cases of syringomyelia: "all of which improved, some to a remarkable degree. All showed increased mobility of the limbs, with diminution of stiffness. One patient's hand had been quite helpless in a *main en griffe* position, but after radium treatment she was able to flex, extend and separate her fingers. A second was able to resume his work as a draughtsman, after six months' disuse of pencil and compasses. Another

remarkable fact was the disappearance in one case of the trophic disturbances characteristic of syringomyelia." [1]

The conclusion that that powerful physical agent, the gamma rays, from Radium C., has some effect on injured nerve areas was forced on me, more or less by accident, in the following case :—

Case I.—Private S., an unimaginative man, of low intelligence, fell off a transport waggon on 10th March, 1917, fractured the anatomical neck of his left humerus, and injured his branchial plexus. When admitted to the Special Military Surgical Hospital, Blackrock, over eight months later, he had limited movement of the shoulder, little power to move his wrist, and was unable to flex his thumb and fingers, especially at the distal joints. Sensation of hand and wrist, except over ulnar distribution, was impaired. His first three fingers were discoloured, and there were trophic changes of the nails of the second and third fingers. Graphs of the movements of the wrist and fingers were made on the 31st December, 1917, with the aid of a strip of lead, as is the routine in the massage department. On the 1st January, 1918, 100 millicures of radium emanation, screened by 3 m.m. of lead in a flat applicator, kindly sent by Dr. Lynham, of the London Radium Institute, was applied for two hours in the axilla, on the front and back of the shoulder-joint, for six hours in all, with the idea of increasing movement in that joint. Two days later the masseuse brought the patient to me, and asked why he could flex and extend his wrist better, flex his fingers better, and why the discoloration of his fingers was less when radium was only applied to the shoulder. The graphs, which I have before me, taken on 5th January, 1918, are conclusive evidence of increase of voluntary movement, which cannot be explained by any change of weather or treatment, or, as they were not expected, by suggestion. The movement in the shoulder was practically unaltered, except that voluntary abduction was temporarily reduced from 63° to 59°.

It is difficult to explain the effect of radium in the fore-

going and following cases. I can only report the results of careful observations and accurate records, in which I have eliminated, as far as possible, the many sources of error, especially suggestion. The sudden improvements in movements obtained cannot be explained by mere personal attention to a patient, muscle re-education, the recent removal of a splint, or any change of environment or treatment that I am aware of. That radium will alter the microscopic appearance of malignant cells six hours after receiving a dose has been proved by Morson. That it will free or loosen scar tissue I have demonstrated frequently, and also that in some cases it will act like a charm in removing the pain and tenderness in a scar. It has an anæsthetic as well as an analgesic effect.[2]

Radium cannot be expected to work miracles, and materially benefit gross nerve lesions. But it would appear to stimulate normal functional activity in nerve tissues which have been injured but are on the road to recovery, either by softening the scar tissue around them or by some action on the nerve-cells themselves, possibly by improving their nutrition. In some cases radiation appears to lessen hyperactivity in a nerve which is being irritated by scar tissue.

When one realises the number of nerve lesions that have resulted in this war, and the long periods one has to wait for recovery after nerve suture, any treatment that presents possibilities of shortening the period of incapacity of a patient is worth considering. On this account the following cases are, I believe, worth recording :—

All the patients except the first were treated by radium emanation supplied by the Royal Dublin Society Radium Institute. I use a surface applicator of 1.5 m.m. thickness of lead, as described in detail elsewhere.[3]

Case II.—Pensioner A., Blackrock; fell 30 feet on 28th April, 1916, and fractured lower spine; 18th February, 1917, left leg flaccid, right leg spastic. He is incontinent, and can move about with difficulty on crutches. On 28th December, 1917, there was no response to either current in the extensor longus hallucis of the right foot or in the

dorsiflexors or peronei of left foot; 3rd January, 1918, radium applied to spine; 7th January, 1918, patient states that for the first time he has felt that his feet were cold. A definite response to galvanism was obtained in the dorsiflexors and evertors left foot, and a slight response in the extensor longus hallucis of the right foot, with ACC greater than KCC in each case. On 10th January, 1918, patient pleased, as he can get about more easily on his crutches.

Case III.—The following case, Major M., should, perhaps, not be included here, as the patient's hand and wrist were irradiated as well as the wounded area in the upper arm. He was wounded on 10th February, 1917; muscle-spiral nerve freed on 17th May, 1917, and median 17th June, by Sir Wm. Taylor, at the Castle Hospital, Dublin, where he attended for massage, and only came to me for radium. He had been massaged for nine months, during the first six of which he had improved greatly. For three months before I saw him the masseuse informed me there had been little or no improvement in the fingers and wrist, and she was disheartened. I could not tell her or the patient if radium would do any good, but it was worth trying. Radium was applied on 19th February, 1918, and I left Dublin for radium work at Alder Hey a couple of days later. On 10th March, 1918, the patient writes: "I believe Miss Despard has sent you the diagram of my hand, showing the enormous improvement it made in ten days. I think the results are extraordinarily good. I wanted to let you know the great success of this treatment." The graphs taken by Miss Despard, masseuse in charge at Blackrock, verify his statements.

I applied radium again on 3rd April, 1918, and he passed a board for home service shortly afterwards, and later for general service. He was most anxious to recover the use of his hand, as the Army was his profession.

Case IV.—Private C., Blackrock; partially divided median nerve in lower forearm sutured by Major W. S. Haughton on 12th November, 1917. On 16th December,

1917, radium was applied for prevention of post-operative scar. On 17th December, 1917, some pain in palm, where it had been anæsthetic. Voluntary extension of wrist extension and flexion of fingers, which had been rigid from muscle spasm, now possible. On 9th January, 1918, marked improvement in movement of wrist and fingers.

Case V.—Private K., Blackrock; wounded on the ulnar side of forearm 11th December, 1917. Limited voluntary flexion and extension of all joints of the hand. Any attempt for months voluntarily to move the fingers had caused violent intention tremors. Radium applied to scar 9th August, 1918. On 12th August, 1918, the tremors had markedly diminished, and the patient had much larger range of voluntary movement.

Case VI.—Private McD., Blackrock; wounded through the left shoulder and chest 9th October, 1917. Pain in scar on back of chest, recovering drop wrist, hyperextension fingers at metacarpo-phalengeal joints. Radium, 21st September, 1918, front of shoulder, axilla and scar on back of chest. On 24th September, 1918, some improvement, flexion of fingers; extension of wrist much improved. Abduction shoulder increased 13°; scar on chest less painful and tender to touch, and, consequently, patient states he has been able to sleep much better.

Case VII.—Private McG., Blackrock; wounded left elbow, 23rd March, 1918. Brachial artery severed and tied at both ends; elbow cannot be completely extended; hand red and congested; radial artery small. Radium applied to front of elbow 6th August, 1918. On 24th August, 1918, seen with Major Haughton; we agreed that the colour of hand and radial pulse was improved. Patient can extend elbow completely; pronation of forearm and power of grip of hand increased, as shown by measurements.

Case VIII.—Private N., Blackrock; wounded right upper arm 18th July, 1916. Trophic changes first and second fingers. Median nerve freed from scar by Lieut.-

Colonel Sir W. de C. Wheeler, 9th August, 1917. On 21st December, 1917, radium on operation scar in upper arm: 23rd December, 1917, opposition of thumb to little finger, which before treatment was very slowly performed, now briskly carried out; increase in range of movement of fingers and wrist, except flexion of first inter-phalangeal joint of first finger, which was more limited; 29th December, 1917, further improvement shown in graphs.

Case IX.—Private M., Blackrock; wounded in left leg 16th March, 1916. Divided external popliteal sutured by Major Haughton 16th March, 1918; on 12th August, 1918, electric reactions; slight response in tibialis anticus to galvanic, none to Faradic current. Other muscles could not be tested on account of the current causing cramp in the feet. On 21st August, 1918, radium applied to wound and operation scars; 22nd August, 1918, electrical reactions greatly improved; response to galvanic current and slight flicker of movement to Faradic current in the tibialis anticus; no response in other muscles, but no cramp, as previously.

Case X.—L/Corporal O'L., Blackrock: wounded middle left forearm 8th September, 1916. Two inches of median excised and nerve sutured by Major Haughton. On 15th October, 1917, graphs of finger taken immediately after massage; on 15th December, 1917, eight weeks after operation, radium applied over sutured nerve to limit secondary scar of operation; 17th December, 1917, some tenderness in palm, where, before the radium application, there was anæsthesia. Graphs before massage show considerable improvement in flexion of fingers following the application of radium alone. Graphs immediately after massage show more than double this range of flexion.

Case XI.—Private P., Alder Hey; wounded 26th September, 1917; right shoulder, arm and immediately above elbow. Radium applied in these three localities, 13th April, 1918; diminished tenderness of scar near elbow and some improved movement of fingers. Again treated with radium 27th June, 1918, and movements of fingers before

and after accurately measured by a goniometer. The increase of voluntary and passive movement is as follows :

	Metacarpo-Phalangeal Joint		1st Inter-Phalangeal Joint		2nd Inter-Phalangeal Joint	
	Active	Passive	Active	Passive	Active	Passive
Index Finger	25°	20°	30°	30°	6°	—
Middle ,,	9°	9°	30°	27°	2°	—
Ring ,,	19°	19°	17°	42°	5°	30°
Little ,,	20°	13°	16°	20°	5°	—

The actual angles of movement show that after radium the patient could voluntarily flex his fully extended fingers as far as I could force them before radium, while the distance I could force them was further increased. For instance, at the index-metacarpo-phalangeal joint, before radium he could flex voluntary to 52°, and I could force the finger down to 72°; while, after radium, he could voluntary flex to 77°, and I could force them down to an angle of 92°. On 1st July, 1918, Captain Lloyd Roberts examined the hand, and noted the improvement in the pliability and voluntary movements of the fingers, though the electrical reactions were not changed since last examined by him on 22nd August, 1918. He suggests that the results were due to improved nutrition following radium treatment.

With the exception of a painful bulb in the ulnar nerve, where no improvement was apparent after radium, the above cases include all of this type I can find in my notes of some 300 military patients treated at Blackrock, Alder Hey and Shepherd's Bush Special Military Surgical Hospitals.

Taken individually, the cases may not be convincing, but taken collectively, the weight of evidence is in favour of radium treatment serving a very useful purpose in

certain types of nerve trauma and in certain stages in the repair of nerve injuries.

The conclusions to be drawn from this work with radium in the treatment of war injuries involving nerves can be summarised as follows :—

1. Radium treatment cannot benefit gross nerve lesions where operative treatment is indicated to unite severed nerves or free them from dense scar tissue.

2. It would appear to aid and to hasten the return of function in a limb after a nerve operation or after milder degrees of nerve trauma.

3. It improves the nutrition in the area supplied by injured nerves.

4. It may be useful as an aid to diagnosis, and in certain cases will indicate or contraindicate the necessity of operation.

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A CASE OF RUPTURE OF THE UTERUS THROUGH CÆSAREAN SCAR.

By GIBBON FITZGIBBON, M.D.

The patient, Mrs. M., age 30, presented herself about the 36th week of her third pregnancy. Her first pregnancy terminated by Cæsarean section on account of contracted pelvis and unalterable transverse lie of the child. Her second pregnancy also ended with Cæsarean section. Admitted 30th January, 1920, at 10 a.m., with a temperature of 96.4° and pulse of 72, the patient said she had been in labour all night; the pains had become

very severe while coming to hospital, but diminished after admission. The fœtus had not been felt for several days, and the patient's bowels had not moved for seven days. When she was seen in bed, at 12.30 p.m., she had no pains, all having ceased after an enema, with good result. The patient was very thin, and had a drawn expression, with slight pallor, or rather a dusky hue, more suggestive of toxæmia than loss of blood or shock. The urine contained no albumin; the abdomen was fairly symmetrical, a little tense and tender, but easily palpated without distress to the patient; the cervix was closed, and there was no taking up of the vaginal portion; the fœtus was lying transversely, with the head to the left of the umbilicus, and the breech, not easily defined, slightly higher to the right of the abdomen. The lie of the fœtus could not be changed, and there appeared to be some part engaged in the brim of the pelvis which could not be drawn up. There were no uterine pains or vaginal discharge, but the patient said there had been a very slight discharge of blood before admission. The patient was considered to be suffering from constipation and intestinal colic, and this was borne out by the steady improvement obtained in her appearance by enemata during the next few days. During this time, however, the patient had rather constant vomiting, and it was only after five days that a purgative was retained, and an action of the bowels secured in that way, after which the patient ceased to show any abnormal symptoms. The fœtal heart could not be heard, but this was thought to be possibly due to the lie of the child, and it was decided to allow the patient to continue under observation with a view either to doing a Cæsarean section at term if the fœtus proved to be alive, or inducing labour, and delivering by version if the fœtus was dead, as it was premature, and would be macerated. After the fourth day in hospital the patient ran a slightly raised temperature, and had slight bloody discharge, but otherwise appeared very well. On February 10th, the discharge having become somewhat heavy in odour, an anæsthetic was given, and

an effort made to turn the child, but it would not shift, and the part over the brim could not be drawn up. The cervix was quite closed and long, and no definite fœtal part could be felt, nor was anything felt pressing down on the vaginal vault.

The cervix was dilated with Hegar's dilators to admit a finger. On passing a finger up, what was thought to be the edge of the placenta was felt, free above the internal os. The cervical canal was extraordinarily long, so that only the distal phalanx of the finger could be got into the uterus. Three bougies were introduced: the first caught when passed about three inches into uterus, then slipped on, as if it had gone through the membranes; the others went easily, but all took the same line, and could not be directed separately owing to the length of the cervix preventing a finger getting high enough to direct them. After the bougies were introduced they could be felt just above the left pubic spine with such ease as to suggest their being extra-uterine, but this appeared to be too absurd. The bougies were left in for 48 hours without any sign of labour coming on; then they were removed, the cervix still only admitting one finger, and a Champetier de Ribes bag was inserted. This did not pass in completely, and was only partially filled; it came away after 44 hours, when the cervix admitted 2½ fingers.

The cervix was still very long, and what was thought to be the free placenta was felt just above the internal os. A foot was easily pushed over the brim and through the cervix, and then version was completed: the leg was drawn down through the vagina, and a 1 lb. weight was attached to it. Still no sign of labour occurred, but during the next 24 hours there was an increase of old, bloody discharge, and it was decided to extract the fœtus through the os as it then was. The abdomen had become somewhat distended, and shortly after this it was found to have distended considerably more and to have become tympanitic all over.

The fœtus was considerably macerated, and as the os was only dilated so as to admit four fingers, but not the

half hand, the leg in the vagina was amputated. Then, on passing the fingers into the uterus, it was found that the uterus was ruptured in front—the fœtus lying in the abdominal cavity and the uterus contracted and lying back in the abdomen above the pelvic brim. What was thought to be the free placenta was the edge of the uterine rent. The fœtus was extracted by morcellation, and afterwards the placenta, which was very putrid, with marked gas formation. The lower abdominal cavity was douched out, maintaining a free return of fluid, and then a large gauze drain put through the rent in the uterus. There was no fresh bleeding during the extraction, and only a small amount of sanguineous fluid came away from the abdominal cavity. The patient's pulse was about 150 after the extraction, but in three hours' time she was feeling very comfortable, with a pulse of 120 of fair strength. Twelve hours later the pulse was 120, temperature 97.6° The gauze drain was removed in 24 hours, and as a quantity of foul, bloody discharge came away, the gauze was replaced by a large rubber drainage tube passed through the cervix and rent into the abdominal cavity in front of the uterus.

The patient made an uninterrupted recovery, the pulse settling down in the next few days, and there being only a slightly morbid temperature. The tube came out of the cervix after 48 hours, and, as drainage was good, was not replaced. The uterus and utero-vesical pouch were douched out with a Bozeman's catheter a few days later. A similar douche was given a few days before leaving hospital, when a small amount of purulent discharge was got away. The patient left hospital fourteen days after delivery in excellent health and free from any symptoms.

The patient came into hospital because she thought she was in labour and because she had had difficulty with the first two pregnancies, not on account of her immediate symptoms. On several occasions when palpating her, it was suggested that the fœtal head, which was the only part which could be definitely felt, seemed to be directly under the abdominal wall, but in the absence of any his-

tory to suggest rupture of the uterus, and with the marked improvement in the patient on the correction of the constipation, the idea was never seriously considered. For the same reasons, when the bougies were felt above the symphysis, the idea that they were outside the uterus was considered absurd. What was taken to be an abnormally long cervical canal was evidently the contracted cervix and lower uterine segment, and it was not till this was sufficiently dilated to allow the fingers to be passed above the constriction that the true condition was recognised. It was then evident that the patient had had a quiet rupture of uterus through the Cæsarean scar, possibly as a result of the labour the night before coming into hospital, and that the extra pain felt before admission was due to the rupture. When she was seen in bed after admission the fœtus was in the abdominal cavity. The part felt above the brim of the pelvis, which could not be drawn up when attempting to change the lie of the child, was evidently the contracted uterus. The toxæmic appearance of the patient and the vomiting during the first few days in hospital were evidently due to the irritation of the peritoneum and absorption of the liquor amnii in the peritoneal cavity. The absence of albuminuria was considered against the diagnosis of toxæmia, but that was thought the only reasonable cause of the symptoms. It is obvious, in the light of the subsequent findings in the case, that signs of rupture of the uterus were present all along, but the absence of any history to suggest rupture, the absence of evidence of shock beyond the slightly drawn expression and slight dusky pallor, and the steady improvement of the patient instead of a condition of increasing shock, completely discounted the only signs of rupture present—namely, the ease with which the head was felt close under the abdominal wall and the slight bleeding before admission, which ceased after admission, and only reappeared after a few days. With regard to the palpation of the head, it could be balloted, but could not be fully gripped, and this was quite consistent with the lie of the fœtus.

REVIEWS.

Modern Physiology and its application to Medicine. "Physiological Principles in Treatment." LANGDON BROWN. Fourth Edition. London: Baillière, Tindall & Cox. Pp. 428.

THE last year has seen the return of many scientific workers to the laboratories. Old investigations have been resumed, new problems arising out of the war are being examined, modern speculations will be applied to recent data, and altogether we may expect a great development of scientific research in the next few years. The importance of physiology with regards to medicine is unquestioned, but physiology and bio-chemistry have grown at such a tremendous rate during the present century that the application of these sciences to practical medicine is a problem in itself.

In a rapidly growing science, quantitative methods are never permanent. Each generation seeks to improve upon the technique of its predecessors, with the result that modifications and simplifications abound. The medical practitioner desirous of estimating the sugar in a sample of urine learns, perhaps, that the method of Fehling is unreliable; seeking an alternative, he is confronted by over thirty standard methods and modifications of the Fehling method, each of which appears excellent according to its description.

It is unfortunate from the physiologists' point of view that this should be so, for many physiologists regard the bedside as the final tribunal. Physiology and medicine are by the very nature of their study linked in a close partnership, and anything that tends to consolidate that partnership is greatly to be desired from either point of view.

Dr. Langdon Brown's little book is an attempt to present the results of recent physiological research in a form that

will be useful to the general practitioner. In this respect his book resembles those of Professor Rendle Short and of Dr. Hutchison. The fact that it is in its fourth edition shows that the value of such a work is well recognised.

There are fourteen chapters on a great variety of subjects, such as: organo-therapy, mechanical factors in digestion and indigestion, albuminuria, intestinal intoxication, and the very fashionable subject, vitamines. There are also nine pages of excellent references at the end which will be found very useful.

Dr. Langdon Brown has compiled very interesting chapters on diabetes, acidosis and intestinal intoxication, which will be very suggestive to many who are not well acquainted with recent research in these subjects. It is a pity that he retains an obsolete chemical nomenclature in parts of his book. Thus, he refers throughout to *aceto-acetic acid* as *diacetic acid* and to *B-hydroxbutric acid* as *B-oxybutric acid*. The latter term, which has been widely used, presumably for brevity, in medical scientific literature, should be discarded, as it is misleading. In the correct chemical sense *B-oxybutyric acid* is the same as *aceto-acetic acid*, $CH_3CO\ CH_2COOH$, and in some of the American text books the terms are interchanged; *B-hydroxybutyric acid* is, of course, $CH_3\ CH\ (OH)\ CH_2\ COOH$. We emphasise this point as a very great deal of confusion still exists regarding the nature and significance of the "acetone bodies" in urine; and some of this confusion is due mainly to faulty nomenclature.

The chapter on gastric disorders is very good, with the exception of the article on the examination of the gastric contents, which is not up-to-date.

The method of gastric analysis which entails the administration of a standard test meal and the removal of the complete stomach contents at the end of one-hour period, has been repeatedly shown to be inaccurate and misleading. (Rehfuss: *Jour. Am. Med. Assn.*, 64. 569, 1914. Bergein, Rehfuss and Hawk: *ibid*, 63, 11, 1914. Hamer and Dodd: *Arch. Int. Med.*, Nov. 13, 1913, p. 488.)

The "Fractional Method" of gastric analysis, as developed in the laboratory of Professor P. B. Hawk, promises to be a valuable instrument in the hands of the clinician.

Dr. Langdon Brown still retains the terms "free HCl" and "combined HCl" in his paragraph on gastric acidity. This classification has given rise to much uncertainty, and it is only within recent years that the introduction of chemical indicators as a means of measuring acidity and alkalinity has simplified the problem. The digestive power of gastric juice depends on the following factors: (1) the amount of enzyme present, (2) the reaction of the mixture in terms of its hydrogen ion content, (3) the amount of substrate, or food material, present, and also the concentration of end products of digestion such as peptides and amino acids, (4) the temperature, (5) the presence or absence of activators, co-enzymes anti-enzymes.

The simplest way of determining the hydrogen ion content is by the indicator method of Sorensen. (*vide* "Practical Physiological Chemistry," S. W. Cole, 5th edition, 1919), and the only practical meaning that the term "combined HCl" can have is that of a "buffer" or "regulator" which tends to keep the contents of the stomach at a constant reaction, The important constituents in every case are the hydrogen ions which are set free by the electrolytic dissociation of the HCl.

Nervous and Mental Diseases. By Archibald Church, M.D., and Frederick Peterson, M.D. London: W. B. Saunders Company. 1919. Pp. 949.

This the ninth edition of Church and Peterson's well-known work presents no very new features as compared with the previous edition. But it is brought well up-to-date, and the authors have evidently weighed the *pros* and *cons* for recent opinions and views before incor-

porating them in the text. The book is divided into two main sections, Dr. Church being responsible for the Neurology, Dr. Peterson for the Mental Diseases.

The book is written for medical students and practitioners, and aims at being but a text-book. Perhaps it will be found more useful to practitioners than to students. Its arrangement is a little too unsimple for average students who find it hard to grasp the elements of clinical neurology : its fulness of description is beyond their powers of assimilation. The able student and the practitioner who keeps himself up-to-date will find it an extremely valuable work.

The authors try always to keep in evidence the relation between symptoms and the underlying cause. The book is not padded with tables of differential diagnoses, which make many text-books rather ridiculous, being appeals to the reader's memory rather than his reason.

It is inevitable that here and there the reader will meet with disappointments, and will find unstable beliefs accepted without criticism of their want of foundation. One such is on p. 39 in regard to the explanation of trophic changes. But otherwise the book has the impress of authority and learning. The illustrations, numbering 350, are many of them excellent and well chosen.

The Diagnosis of Nervous Diseases. By Sir James Purves Stewart, K.C.M.G. Fifth Edition, Revised and Enlarged. London : Edward Arnold. 1920. Pp. 584.

Recent advances in neurology make us welcome a fifth edition of this excellent book. A short chapter on the clinical aspect of the neuroses has been added, and much new work has been incorporated ; Ramsay Hunt's, for instance, on the pallidal and neostriate systems, is briefly summarised, and Head's researches on the representation of sensation in the cortex, published in 1918, are included.

The knee-jerk is still refused the status of a true reflex, a finding not in accordance with recent work. The author agrees with Babinski in distinguishing the group of reflex palsies from hysterical manifestations. The relation of causalgia to lesions of those nerves which have a special artery supplying them (median, sciatic and optic) is pointed out.

The book is admirably arranged for reference in chapters dealing with symptoms—pain, coma, inco-ordination, postures, and gaits, &c. A Spanish edition of the work is being published in Barcelona.

Röentgen Interpretation: A Manual for Students and Practitioners. By George W. Holmes, M.D., and Howard E. Ruggles, M.D. Philadelphia and New York: Lea & Febiger. 15s. net.

This book deals with anatomical variations and development, bone and joint injuries, diseases of bone, the chest, and the digestive and urinary tracts. A very valuable feature is the references which are given to the recent literature for more detailed information on particular subjects.

The matter is excellent. Each subject is treated in a concise and direct way, and there is no "packing."

The illustrations are copious; some of them, however, are lacking in detail. This is due in some instance, no doubt, to the reproduction of negatives which were obtained at a time when technique was not so perfect as it is now, for it is obvious that such a valuable collection of material could be secured only after the lapse of many years.

The more liberal use of arrows to indicate the particular lesion would greatly enhance the value of the illustrations—even to the initiated these are in some instances obscure.

The sections dealing with the digestive and urinary

tracts are not so comprehensive as might be expected, but here also will be found much valuable information which will aid one to avoid many common pitfalls.

The authors express the hope that this book will prove of practical aid to those in search of a working knowledge of röentgen interpretation. We can assure them that they do not hope in vain. They postulate the necessity of medical training, and particularly a thorough knowledge of pathology as essentials to the success of the radiologist—they might also have added osteology.

We welcome this first attempt to deal with a large and important subject in a systematic and scientific manner, and we congratulate the authors on the success which they have attained.

The beginner, as also his elder brother, will find within its pages a fund of very valuable information.'

M. R. J. Hayes.

Industrial Medicine and Surgery. By Henry E. Mock, B.S., M.D., F.A.C.S.; Assistant Professor of Industrial Medicine and Surgery at Rush Medical College. London and Philadelphia: W. B. Saunders Company, Ltd. 1919. 8vo. Pp. 846. Price 42s. net.

This book, instead of dealing with the pathology, diagnosis and treatment of specific diseases, or the individualistic practice of medicine, confines itself to medicine and surgery as it is met with in a large firm having a big pay roll.

For company medical men or even employers it is a boon, as accident prevention and health conservation are its basis. Amongst other things, it helps to show employers that there is nothing more costly than cheap medical work.

Highly technical language is avoided, and that fact, together with 210 beautiful illustrations, help to extend the book's usefulness to the layman.

Part IV., comprising Chapters XXXI. to XL. inclusive, is full of interest not only to a company surgeon but also to all those practising general surgery. The very carefully compiled statistics are a noteworthy feature of this work.

In fine, this book is invaluable to anybody actively interested in industrial work.

B. F. Honan.

ABSTRACTS OF CURRENT LITERATURE.

SURGERY.

SURGERY OF THE HEAD AND NECK.

COLEMAN, C. C. : *Repair of Cranial Defects by Autogenous Cranial Transplants.* "Surg., Gyn., and Obst." Vol. XXXI. No. 1.

KERR, H. H. : *Late Treatment of Gunshot Wounds of the Head.* "Surg., Gyn., and Obst." Vol. XXX. No. 6.

A CONSIDERABLE number of patients with war wounds of the head have a cranial defect with or without associated cerebral lesions. Repair of the defect has no influence on cases in which there is damage to the brain except in as much as it may afford a certain amount of relief of local discomfort or remove an obvious cause of nervousness. In other cases, however, while the intracranial conditions are normal the patients complain of throbbing and pulsation about the defect, vertigo on exertion, a feeling of insecurity, and particularly of the dread of injury to the unprotected brain. Any sudden change of position, such as stooping, a sudden movement of the head, or coughing, may be followed by one or more of these symptoms. Patients in the latter class are benefited by closure of the defect. The authors of these papers use the method practised by Frazier and Delangenière. Kerr operates under local anæsthesia. The scar tissue of the scalp is removed, and the opening in the skull defined; the dura is not deliberately opened. The edges of the opening in the bone are bevelled. A pattern of the defect is then cut out of muslin or rubber dam and applied to the parietal eminence or other convenient site on the skull, and a osteoperiosteal graft is chiselled from the outer table of the bone. This is transferred to the defect and its periosteum sutured to that around the opening. In the cases in which the procedure is indicated the results are excellent.

ADAMS A. MCCONNELL.

JAMIESON, J. K., and DOBSON, J. F.: *The Lymphatics of the Tongue, with particular reference to the Removal of Lymphatic Glands in Cancer of the Tongue.* "Brit. Jour. Surg." July, 1920. P. 80.

CERTAIN points in the distribution of the tongue lymphatics are emphasised. From the tip, frænum, and back of the tongue the lymphatics are distributed *bilaterally* in the neck: those from the lateral border alone are homo-lateral. The groups of glands to which these lymphatics run *directly* are: (a) the submental, (*b*) the submaxillary, and (*c*) two definite sub-groups of the deep cervical series—(1) the jugulo-digastric situated in the triangle formed by the posterior digastric belly, common facial vein and internal jugular vein; and (2) the jugulo-omohyoid situated just above the central tendon of the omohyoid muscle.

In no case could the superficial cervical glands which accompany the external jugular vein be injected from the tongue.

The authors deduce from this anatomical study: (1) That in *early* growths of the lateral border of the tongue a unilateral block-dissection of the neck should be performed, removing in one mass the sterno-mastoid, internal and external jugular veins, an area of deep fascia, and the lower and upper deep cervical, submaxillary, and submental glands. (2) Only in *very* early growths of the tip or frænum should a unilateral block-dissection be done. (3) In more advanced growths of the lateral border, tip, frænum, and dorsum, and in *all* growths of the back of the tongue, an extra-buccal operation is essential (a Syme or its modifications) *plus a bilateral block-dissection of the neck*, preserving the internal jugular on one side. This operation can only be performed with safety in three sittings, but refusal means contra-lateral recurrence.

Removal of a slice of parotid together with the posterior digastric belly facilitates removal of the highest of the deep cervical glands. The submaxillary salivary gland is removed with its lymphatic group, and the anterior belly of the digastric with the submental glands.

The authors are convinced that cancer cells spread through the *large* lymph vessels as emboli and not by permeation. They point out that the course of certain of these large vessels—*e.g.*, through the pharyngeal wall—renders their complete removal impossible, and according to the embolic theory, which they believe established by Butlin's excellent results, it is unnecessary.

A. K. H.

MADLENER: *Ligature of the Four Thyroid Arteries for Goitre.* "Ztblt. f. Chir." 31. 1920.

SO-CALLED "recurrence" of goitrous enlargements occur not infrequently after partial thyroidectomy. They are to be regarded as a continued growth of the pathological process in the un-

operated half of the gland, particularly in cases of bilateral enlargement where only one lobe has been removed.

Since December, 1918, Madlener has operated on 140 cases of bilateral thyroid enlargement. In 131, both lobes were largely resected. In nine cases unilateral resection plus ligature of one thyroid vessel of the other side was carried out. In 93 cases a preliminary ligature of all four arterial stems was carried out, followed by extensive resection of parenchymatous tissue, leaving a thyroid " rest " on either side of about the size of a hen's egg. At the upper poles, both artery and vein were ligated; below, the artery was always isolated before tying, the vein being left free. The posterior thyroid capsule was disturbed as little as possible, as, according to the more recent researches of Euderlen and Hotz, it is on the retroglandular collateral anastomosis between the œsophageal and tracheal arterial supply with the inferior thyroid arterial branches that the thyroid tissue left depends for its nutrition after the operation.

Out of 93 cases so treated, all but three made an uneventful recovery. One patient died of severe tetany on the thirtieth day after operation. In this case, and in two others, suppuration of the wound took place. All three were large, richly vascular goîtres. Madlener is unable to account for the one fatality. The patient died of tetany, which did not set in till the twenty-fourth day after operation. It is possible that the extensive ligation so interfered with the parathyroid circulation as to induce a slow necrosis of these glandules. He concludes that ligature of three or three and a half of the greater vessels is a safe and commendable procedure.

Wm. Doolin.

Flarcken and Fritzsche: *Transplantation of Human Parathyroid Tissue for Post-operative Tetany.* "Ztlblt. f. Chir." No. 33. 1920.

A detailed report is submitted of a patient, aged twenty-three years, who had been operated on at twelve years for bilateral goître. Three years after operation symptoms of chronic or latent tetany established themselves. The tetanic attacks recurred periodically each year from January to May: for the remaining months the patient remained free from symptoms. The patient displayed all the usual signs of the condition—viz., restlessness, cramping pains in hands and arms, loss of hair, forgetfulness, occasional drowsiness: Chvostek's and Trousseau's signs markedly positive.

In February, 1920, a patient of the same age was operated on for large unilateral goître, and the upper right parathyroid glandule was excised, and directly implanted into the internal oblique (abdominal) muscle of the tetany patient. Two months later

(April 30th) she reported that since the transplantation no recurrence of cramps had taken place, psychical condition much improved; Chvostek's and Trousseau's signs both still present, but of much less marked intensity.

The parathyroid transplantation was at least temporarily successful, in that the periodic recurrent attacks from which the patient used suffer for eight years have since operation completely disappeared. A complete cure has not taken place, as definite signs of a latent tetanic condition still remain. No untoward symptoms appeared in the patient from whom the parathyroid graft was removed.

Wm. Doolin.

Eastman, J. R.: *Advantages of Local Anæsthesia in Thyroid Operations.* "Jour. Amer. Med. Assoc." July 17, 1920. P. 160.

Eastman makes the following claims for local anæsthesia:—Less danger of post-operative pneumonia; less strain thrown on heart and kidneys; less shock, especially if the anæsthetic be combined with the administration of a sedative hypodermic an hour before operation; less danger of injury to the recurrent laryngeal nerve, as patient can be asked to talk; less danger of asphyxia due to venous engorgement; bleeding is less, especially if adrenalin be added to the anæsthetic solution. Liquids and nourishment can be given almost at once: there is no vomiting, and, therefore, less danger of post-operative bleeding. The infiltration of the subcutaneous tissues facilitates the reflection of the skin, and further facilitates the isolation of the tumour from its surroundings. Patience and much gentleness are indispensable. The patient is let place his head in the position which gives the greatest ease. The author uses a 1 per cent. solution of procain-epinephrin, injected copiously into subcutaneous tissues, muscles, and tissues deep to the tumour. Deep injections are used at the upper and lower poles.

V. J. McAllister.

Mason, J. T.: *Mistakes in 100 Thyroidectomies; with description of a new method of Thyroid Cauterisaton in treating Exophthalmic Goître.*

Mason reviews a series of 100 thyroidectomies for relief of toxic symptoms. Of these, 58 had toxic adenomas (one death); 42 were classified as exophthalmic goître with five deaths. Recognition of certain errors has reduced operative mortality.

Toxic Adenomas.—The sequence of symptoms is somewhat

different from those of exophthalmic goître. There is usually no sudden exacerbation such as characterises exophthalmic goître, but a gradually increasing chain of symptoms over many years, and beginning years after the first appearance of the goître. The author's cases showed goître to have existed for several years at least before toxicity supervened, enlargement having begun in the teens or twenties.

Substernal tumours, the author believes, nearly always cause toxæmia, and are of an adenomatous nature.

Six patients had recurrent symptoms and were re-operated, the gland tissue left at the first operation having become enlarged. At the end of a couple of years the toxic symptoms had re-developed quite rapidly.

Rest and preliminary treatment are very important in bad cases. Most of the thyroid gland is removed, usually under morphin and local anæsthesia. Provided the cardiac condition is good, the patient leaves hospital in a week.

Post-operative results were sought for in January, 1920. More than 50 per cent. answered. All were improved; the majority were cured. In fact, there is no group of cases in which the end results are better than in thyroidectomy for toxic adenomas. Bad judgment was manifestly exercised in certain of these cases (1) in operating on bad cases without preliminary treatment, (2) in not trying the effect of preliminary treatment on certain very ill patients with a view to thyroidectomy. Extremely bad cases may sometimes improve sufficiently to stand operation.

Experience has led the author to recognise the disadvantage of being too conservative as to the amount of thyroid tissue removed. Toxic symptoms tend to recur if too little is taken away.

Exophthalmic Goître.—This disease, with few exceptions, runs a typical course, as has been recently confirmed by Blackford in studying the author's cases.

The typical case shows slight thyroid enlargement with mild toxic symptoms during several months. The symptoms gradually increase until about the eighth month, when they become markedly worse. During the ninth month there is a distinct crisis. Then follows a period of improvement. About the end of the second year there is a second crisis, never quite so severe as the first from a toxicity point of view. After this there are ups and downs until, after years, the toxicity of the goître wears out, and we have occasionally a cure, but usually a human wreck, suffering from cardiac and general degenerations. Early in the disease it may be difficult to make a diagnosis of hyperthyroidism. The basal metabolism rate will be of great assistance at this period, because it assures the diagnosis and enables us to urge surgical interference before heart, liver, and kidneys have been damaged. Rest and suitable drugs determine a temporary improvement, which the author deplores as inducing patients to postpone surgical help in

good time. The ideal time for operation is within the first six months. The closer we get to the high wave of toxicity the higher is the mortality and the larger the number of incomplete cures.

In extremely toxic cases the pulse, pulse-pressure, patient's history, general condition and metabolic rate give an index to the degree of intoxication. The shock or exacerbation of symptoms after operation is not always what one expects in these severe cases. Sistrunk says that of two patients with a plus 50 metabolic rate and other findings about the same, one may stand thyroidectomy well, the other badly. In other words, we have no accurate way of determining the amount of damage already done, although our findings on the present activity of the gland may be fairly accurate.

Post-operative results in the three-fourths of the author's operated cases who replied to inquiries show that all are improved, and most of them feel well. Two are still markedly cardiopaths. A third is in hospital with degenerative changes dating back to the first high wave of toxicity. These exemplify the usual condition seen in cases treated exclusively by rest and medicines; the hyperthyroidism has disappeared, but the degeneration of vital organs persists.

Five cases required re-operation. In these five cases there were remarkably severe reactions following thyroidectomy, and the author believes that the more gland tissue that is removed the less is the post-operative reaction.

In really bad cases as simple an operation as possible is undertaken. Local anæsthesia is employed with a little ether if traction on the gland is necessary. Ligation of thyroid vessels will often precipitate a severe attack of hyperthyroidism. There is almost always reaction to ligation. What improvement results the author considers must be due to some process of self-immunisation resulting from such recurring reactions. Cauterisation of a portion of the thyroid can be done painlessly, without reaction and with marked benefit as a preliminary to thyroidectomy in bad cases. Local anæsthesia is employed. A 2 c.m. incision is made just to the inner side of the sterno-mastoid muscle, in the line where the thyroidectomy incision will be made later on. The gland is exposed and portion of its surface, the size of a shoe button, is thoroughly cauterised and the skin closed. An electric cautery is used. Very little local reaction results in the wound. The procedure may be repeated along the line of the thyroidectomy incision every few days, destroying larger portions of gland, until the patient appears fit to stand thyroidectomy. The author is pleased with the results of this fractional cauterisation, and recommends it for trial in severe exophthalmic cases in preference to ligature of vessels and as a preliminary to thyroidectomy. No mention is made of *x*-ray treatment.

V. J. McAllister.

BARTLETT, W.: *An Emergency Technique for Thyroidectomy.* "Jour. Amer. Med. Assoc." July 17, 1920.

BARTLETT describes a technique applicable to cases whose condition is too good to justify such a minor procedure as ligation, but in whom no possible guarantee of safety can be given if they are subjected to classical thyroidectomy.

Preliminary rest, dieting, &c., are recommended. One lobe of the thyroid is removed under local anæsthesia through an incision parallel to, and immediately posterior to, the anterior border of the sterno-mastoid. This gives ready access, although not best from a cosmetic point of view. In order to shorten the operation as much as possible, forceps are left *in situ* at the end of operation. All except those on main thyroid vessels are loosened at end of twenty-four hours and allowed to fall off. The wound is left open for forty-eight hours, the forceps helping to prevent any locking up of thyroid secretion. At the end of forty-eight hours skin sutures put in place at the operation are tied.

The results the author considers extremely satisfactory in the type of case indicated. Even the cosmetic result is not as bad as might seem inevitable in the case of a wound left unsutured for forty-eight hours. Beyond difficulty in swallowing, the patients make little complaint about the forceps. These are supported on gauze.

V. J. MCALLISTER.

LAHEY, F. H.: *Diagnosis and Management of Intrathoracic Goitres.* "Jour. Amer. Med. Assoc." July 17, 1920.

LAHEY believes that the slender character of the anterior neck muscles and firm attachment to the trachea account to a great extent for the comparative infrequency of intrathoracic extension of thyroid enlargements. A certain percentage of enlargements are completely intrathoracic: like incompletely intrathoracic growths, they may be adenomas, cysts, or of the colloid type.

Discussing symptoms, the author regards periodic attacks of respiratory obstruction as constant, several of his cases having been treated for asthma.

X-ray shows a substernal shadow continuous with middle-line neck structures and causing a widening of the upper sternal shadow, a bowing or deviation of the trachea, and the fact that the tumour moves with the trachea. An essential point in connection with operative treatment is to avoid piecemeal removal: remove unbroken, else bleeding will be severe, and, of course, difficult to control. With the finger seek to enucleate the tumour

tissue in its capsule from surrounding condensed connective tissue working from below upwards. A good deal of force can be employed in this fashion in order to free the tumour. In one case, in order to effect delivery, the author divided the manubrium vertically, and widened the thoracic inlet by inserting a wedge into the division so made. After delivery a pedicle is left, consisting of elongated inferior thyroid vessels. These supply most of the blood to such intrathoracic tumours. Gas-oxygen anæsthesia was employed where possible, but of the author's five completely intrathoracic cases, one was an emergency without any anæsthetic, one had local anæsthesia, and one intra-tracheal ether. Of these, four recovered, one died of double pneumonia.

V. J. McAllister.

Thompson, J. E.: *Surgery and Embryology.* "Surg., Gyn. and Obstet." July, 1920. P. 18.

After describing various anomalies of surgical importance, the author suggests that ranula-like congenital cysts found at various levels of the neck are derived from the cervical sinus and not from salivary or mucous glands. The cervical sinus is formed in the embryo by a caudal extension of the second arch which grows to overlap the third and fourth. Thompson believes that portions of the cysts derived from this sinus may be separated and carried by migration of muscles during development to the upper part of the neck. He describes two varieties of cysts—(1) Simple sublingual cysts (ranulæ), and (2) complex cysts consisting of sublingual ranulæ connecting in various combinations with submaxillary and cervical cysts. In one case an apparently simple ranula was found to communicate through a narrow isthmus with a diverticulum extending to the base of the skull and related to the styloid process, the bodies of the cervical vertebræ, and to the internal carotid artery.

A. K. H.

SURGERY OF THE ABDOMEN.

Downes, W. A.: *Congenital Hypertrophic Pyloric Stenosis.* "Jour. Amer. Med. Assoc." Vol. 75. No. 4.

Projectile vomiting, loss of weight, visible peristaltic waves in the epigastric region passing from left to right, and the presence of a tumour to the right of and above the umbilicus, make the diagnosis of congenital hypertrophic stenosis of the pylorus certain. The presence of the tumour, consisting of the hypertrophied circular fibres of the pylorus, is conclusive evidence of the disease.

and should always be demonstrated. If necessary, a catheter should be passed into the stomach to remove gas, and the abdominal wall relaxed by allowing the baby to suck water from a bottle during the examination. If the patient is observed from the onset of the symptoms medical treatment is justified for a period of from seven to ten days, *provided* that the baby does not lose more than 20 per cent. of its body-weight during this time. If there is no *definite* improvement, immediate operation is indicated. Up to the last few years the results following operative treatment of pyloric stenosis in infants were so uncertain that physicians hesitated to recommend this form of treatment. But now gastro-enterostomy—a most formidable operation in an infant—has been supplanted by the simple incision of the pyloric muscular fibres with a remarkable lowering of mortality. The mortality from medical treatment is anywhere from 10 to 50 per cent., while in cases in which the loss of body-weight has not fallen below 20 per cent. the operative mortality is just under 2 per cent. Downes reports 175 cases operated on by himself, with a mortality of 17.1 per cent. These results include late and moribund cases. In those which came to operation in four weeks or less after the onset of symptoms the mortality was 8 per cent. The operation performed was suggested by Fredet, who first voiced the principle of longitudinal incision of the serous and muscular coats of the pylorus, thereby liberating, but not opening, the mucosa. This surgeon then sutured the wound transversely. Ramstedt later suggested leaving the wound unsutured. The abdomen is opened through the right rectus above the umbilicus, the pylorus is readily grasped between the finger and thumb of the left hand, a longitudinal incision is then made about the junction of the upper and middle thirds, starting just proximal to the duodenum and extending as far as is necessary into the gastric wall. The incision is only deep enough to divide about half the muscle fibres, the remainder are gently torn by spreading the blades of a small forceps in the centre of the incision. The mucosa should bulge into the wound along the length of the incision. Great care must be taken in spreading the muscle at the duodenal end, as the change from the thick-walled pylorus to the normal duodenum is very sudden, and there is great danger of opening the mucous membrane at this point. Complete division with the knife should never be attempted. A small artery at the duodenal end may require a ligature, or if it has retracted it may be necessary to suture a bit of muscle over the bleeding point.

Early diagnosis, careful record of progress as revealed by weight, and immediate treatment by the Ramstedt operation offer the best prospects in this condition.

ADAMS A. MCCONNELL.

TERRY, W. I.: *Ulcer of Jejunum following Gastro-enterostomy.* "Jour. Amer. Med. Assoc." Vol. 75. No. 4.

TERRY believes that the principal factor in the production of these ulcers is the introduction into the jejunum of non-neutralised acid gastric juice, and that trauma, be it from tight application of clamps, injuries of blood-vessels, or retained sutures, further lowers the resistance of the jejunum or of the anastomotic opening to the digestive action of the gastric juice. He could find only one case of jejunal ulcer after gastro-enterostomy for cancer of the stomach. Jejunal ulcer has followed anterior gastro-enterostomy in a greater proportion of cases than after the posterior, presumably because a longer loop is present. The further down the jejunum the anastomosis is made the greater the chance of jejunal ulcer. When the loop is short, the alkaline duodenal contents neutralise the acid chyme from the stomach practically immediately. Mayo believes that the use of an unabsorbable suture is the chief factor in the production of ulcers at the suture line, while Ochsner used silk in every case, and attributed the immunity of both his patients and Mayo's from this complication to the fact that the gastro-jejunal opening is made at the lowest point of the stomach, so that there is no accumulation of acid gastric juice. Horsley points that the best results follow gastro-enterostomy for complete pyloric stenosis, and that in this case the alkalinity of the duodenal contents is not diminished by leakage through the pylorus, but that it is at its maximum when it reaches the gastro-jejunal opening. Mayo treats gastro-jejunal ulceration by excising the ulcer, closing the stomach and jejunum, and performing a pyloroplasty by Finney's method. The result of this procedure is to restore the acid chyme to the duodenum where it can be neutralised rather than to the jejunum where it cannot be neutralised so rapidly.

ADAMS A. MCCONNELL.

EISENDRATH, D. N.: *Operative Injury of the Common and Hepatic Bile-ducts.* "Surg., Gyn., Obst." July, 1920.

BEHREND, M.: *Improved Technic for the Removal of the Gall-bladder.* "Jour. Amer. Med. Assoc." Vol. 75. No. 4.

MAYO, C. H.: *Jaundice and its Surgical Significance.* "Surg., Gyn., Obst." June, 1920.

THE first two papers deal with the anatomical abnormalities of the cystic and common bile-ducts, and the hepatic and cystic arteries, and present surgical methods of cholecystectomy designed to meet every eventuality, while Mayo's paper is chiefly concerned

with the operative repair of injuries to the common duct. Eisendrath collected 57 cases of injury of the bile-ducts, due either to errors in technique or to anatomical variations. In 12 cases the junction of the cystic, hepatic, and common ducts was resected, an accident which resulted from traction on the cystic duct and the blind application of a clamp. In 19 cases the main hepatic duct was torn. When the cystic duct runs parallel to the hepatic duct for some distance, or winds spirally round it, this accident is particularly liable to occur. The common duct was resected in 16 cases, usually because of a similar abnormality. In one case the right hepatic duct opened into the cystic duct, and their common junction was divided. Abnormalities of the cystic artery accounted for three accidents to the ducts. In these cases a second artery passed to the gall-bladder and was overlooked until divided, when the bleeding point was caught with a forceps which included one of the ducts. In the cases reported, operative repair was undertaken in 42, whilst 4 of the 51 cases died—2 of cholæmia. It is probable that the number of cases reported does not represent the number of such accidents which have actually occurred, but only indicates those which have been more or less successfully treated. Mayo points out that unless repair is carried out immediately, the common duct atrophies and cannot be utilised, and the patient succumbs to cholæmia. The ideal method of repair is circular suture of the divided ends. If the distal end of the common duct cannot be found, an anastomosis between the proximal end and the duodenum is carried out over a rubber tube. When the ends of the duct cannot be brought together, a rubber tube is inserted into both segments of the duct and omentum wrapped round it. Eisendrath advises that the following precautions be taken during cholecystectomy :— The incision should give adequate exposure of the biliary region. He uses Kehr's incision. The anterior leaf of the gastro-hepatic omentum is divided, and the common bile-duct exposed and followed upward, care being taken not to injure any of the fine vessels lying on the surface of the duct. The pelvis or ampulla of the gall-bladder is then separated from the common duct, thus exposing the cystic duct and artery and the main hepatic duct. When the cystic duct runs parallel to the common, or when it winds spirally round it, great care must be taken in the separation before a ligature is placed close to the termination of the former. No strand of connective tissue in this region should be clamped or divided till one is certain it does not contain an important vessel or duct. The cystic duct and artery should never be clamped until they have been isolated and ligated separately. The following anomalies should be familiar to every surgeon, otherwise it is wiser to do a cholecystostomy.

The gall-bladder may be absent, rudimentary or hour-glass; it may lie more or less completely enveloped in liver tissue; its pelvis may be on the upper instead of the lower side; the right hepatic

duct may empty into the gall-bladder. The cystic duct may be double; the right hepatic duct may empty into the cystic; an accessory hepatic may empty into either the cystic or the junction of the cystic and main ducts; the cystic duct may be so dilated as to be indistinguishable from the main hepatic duct; the cystic duct may be very small and extremely short. There may be four or five ducts instead of one main duct; there may be accessory hepatic ducts. The common duct may be extremely short or very long, or it may be double. Its retroduodenal portion lies within the pancreas in 95 per cent. of patients. There may be abnormalities of any of the vessels. Open dissection and a clear view of the biliary tract and vessels, no matter how difficult to obtain, is the only guarantee against dangerous secondary operations and avoidable fatalities.

ADAMS A. MCCONNELL.

BARDON and COIQAUD: *The Operation of Cæco-Sigmoidostomy in the Surgical Treatment of Chronic Constipation due to Stasis of the Ascending Colon.* "Jour de Méd. de Bordeaux." June 25, 1920. P. 323.

THE authors advocate this operation, introduced by Hartmann in 1905, when constipation is of the "ascending" type described by Lardennois, presenting at first borborygmi in the right iliac fossa, and, later, attacks of colic accompanied by the appearance in the region affected of a balloon-like swelling which the patient can often reduce by manual pressure.

Discussing those cases in which obstruction is due to mechanical causes, when, for example, ptosis of the transverse colon has occluded the hepatic flexure, and the general condition of the patient is good, they think, with Pauchet, that the least complex surgical procedure is the best. They, therefore, dismiss ascending colectomy because it is dangerous; ileo-sigmoidostomy because if the short circuit is absolute diarrhœa results, while if it is not absolute the fæces regurgitate and refill the large gut, so that the sluggish sewer becomes a cesspool. They claim that after cæco-sigmoidostomy the task of the colon is alleviated, but its absorptive function is not abolished, and there is no diarrhœa. On the other hand, the ascending colon is admirably drained.

As regards technique, with the patient in the Trendelenburg position, the cæcum and sigmoid are brought out through a subumbical incision. The interperitoneal space bounded by the mesentery, the parietal peritoneum, and the meso-sigmoid, is obliterated so as to exclude small intestine, by a suture which is not tied until after the anastomosis is completed. This suture is introduced successively into the right face of the meso-sigmoid, the peritoneum covering the sacral promontory, and the left face

of the mesentery at its ileo-cæcal extremity. The appendix is removed, the cæcal *cul-de-sac* is resected, and the divided end of the cæcum is implanted into the side of the sigmoid. A successful case is reported in detail.

[A reason which the authors urge against ileo-sigmoidostomy might be urged with equal force against the operation which they recommend. If the transverse colon has sagged into the pelvis, and if the hepatic flexure is obstructed, there is the theoretical prospect that the fæces will collect in the V-shaped loop of colon. Pauchet and Delbet, however, find the Y modification introduced by Lardennois and Ockincyzc to prevent this reflux an unnecessary complication.]

A. K. H.

GENERAL SURGERY.

FRANGENHEIM: *Osteochondritis deformans: osteoarthritis juvenilis deformans coxæ: coxa plana.* "Ztlblt. f. Chir." No. 31. 1920.

IN 1897, Maydl published the clinical details of a hitherto unrecognised hip lesion in two young patients, in which the outstanding departure from the normal consisted of an apparent flattening of the head of the femur, associated with secondary changes in the acetabular socket. To this condition he gave the description of osteoarthritis deformans juvenilis coxæ.

Following upon Maydl's observations, a series of cases of similar nature has been recorded in German literature. Perthes (1913) described the condition as one of osteochondritis deformans, whilst Waldenström later alluded to it as coxa plana.

Owing to a mistaken diagnosis of tuberculous arthritis, Frangenheim carried out a resection of the hip-joint in a young subject, and failed to recognise the true pathology of the condition till the material obtained at operation was subjected to further investigation. This investigation lends definite support to Maydl's original conception of the pathology of the condition. The primary lesion is in the head of the femur, and is confined to its true epiphysis. The epiphysis is not a smooth, flat plane, such as its *x*-ray appearance would lead one to expect, but is irregularly mis-shapen and deformed. This deformity is due to a disappearance (or non-development?) of the bony tissue immediately underlying the articular cartilage; this latter structure is intact, on both femoral head and acetabular floor. Perthes' conception of an osteochondritis would, therefore, appear to be erroneous. There are no associated changes in the femoral neck, nor in the tuberculum majus. The description "coxa plana" is objected to on the grounds that it throws no light on the true nature of the disease.

WM. DOOLIN.

PETERS: *Tuberculosis of the Male Genital Organs.* "Beiträge z. Klin. Chir." 1919. Bd. CXVIII. Hft. 2. P. 421.

IN Sarré's clinic at Bonn, during the past twenty years, 114 cases of genital tuberculosis were operated upon. In only 22 of these was injury of direct ætiological importance. The majority of the patients were between twenty and forty years of age, the youngest of the series being only two years, whilst 13 of the patients were past the sixtieth year. In 36 cases, rectal examination demonstrated positive pathological change in either prostate or vesicles. In 12 cases the cord was also affected. In 39 patients tuberculous lesions were present elsewhere in the body. The epididymis in all cases was the seat of the primary deposit.

In unilateral affections, orchidectomy was the procedure usually adopted. Epididymectomy was carried out only in those cases where no sign of testicular involvement was demonstrable at operation. Of 13 cases so treated, only one returned with recurrence in the corpus testis. Operation was refused in patients with tuberculous extra-genital lesions, particularly where such lesions were present in the urinary tract.

In cases of bilateral infection, where feasible, as much testicular tissue as possible was preserved on the less advanced side; but, where the process was advanced in both organs (especially where abscess or fistula was present), a complete castration was carried out. In selected cases of complete castration, implantation of particles of healthy testicular tissue was employed, with partial success.

In young patients, double castration produced later deficiency symptoms in only a small proportion of cases.

WM. DOOLIN.

MAYEDA, T.: *A Cord-like Structure in the Knee-joint (Chorda cruris articularis genu).* "Mitteilungen Med. Fakultät. Kaiserlichen Univ., Tokyo." XXI. Bd. 3 Heft. P. 507.

THE author, after an exhaustive study of the occurrence of cord-like structures in the knee-joint of the fœtus, child, and adult, finds that certain of these cords are congenital, and may be divided into three groups:—

(1) The cord unites the plica alaris (the fringe-like edge of the ligamentum mucosum) to the inner surface of the joint in the neighbourhood of the adjacent condyle. This group, like the ligamentum mucosum itself, consists of remnants of the saggital partition between the internal and external tibio-femoral joints.

(2) The cord unites two points on the circumference of the orifice through which the joint cavity communicates with the suprapatella bursa.

(3) The cord crosses the cavity of the suprapatellar bursa.

Only the first and second groups have any clinical significance. Moving over articular surfaces they may give rise to crepitation. If they are long they may be nipped between articular surfaces, and if they lose their attachments they may become loose bodies in the joint. Their occurrence should be remembered in the diagnosis of internal derangement of the knee.

A. K. H.

ROYAL ACADEMY OF MEDICINE IN IRELAND.

President—Sir John Moore, M.D.Dubl., F.R.C.P.I.
Secretary—J. A. Scott, M.D., F.R.C.S.I.

SECTION OF STATE MEDICINE.

President—R. J. Rowlette, M.D.
Secretary—E. G. A. Webb, M.D.

Friday, March 19, 1920.

Discussion on Sir William Thompson's Paper "Influenza Mortality." Read by Dr. Falkiner in Sir William Thompson's absence. (See "Dublin Journal," June, 1920. P. 174.)

The Chairman (Dr. Rowlette), having thanked Dr. Falkiner for reading this excellent communication, said the most remarkable thing was the large number of young adults attacked in the epidemic of 1918 as compared with the number in other epidemics. He wanted to know what complications other than pneumonia caused death. At the Royal Hospital for Incurables during the 1899-1900 outbreak there were a great many deaths among old people, many of them from cerebral hæmorrhage. Was this a common cause of death following influenza? He had not seen any case of this kind in the last epidemic. The incidence as well as the mortality was greatest this time in young adults. Was the mortality among the working class man and woman to be explained by the fact that they continued working when the disease had a firm hold of them? That had been his experience in his hospital.

1890 was the first great outbreak in the memory of most of them, and most people thought it was the worst till 1918, when, in fact, the mortality was higher in several intervening years. Was this because of more careful notification of deaths as due to influenza? The mortality in 1892 was double that of 1890.

Was there any evidence in possession of the Registrar-General of the incidence of the disease in other years?

Sir John Moore said that many thought that all danger of influenza was at an end. He did not believe this, and brought down the return of the Registrar-General for last week. The death-rate from influenza in London was steadily increasing. In the 96 large towns of England and Wales 230 deaths from influenza were registered, and it was appalling to think that in Belfast the mortality was one-tenth that of all the 96 towns. The mortality in the 96 great towns for the weeks from 20th December, 1916, to last week was as follows:—64, 43, 52, 73, 62, 85, 66, 98, 109, 161, 178, 196, 230.

He believed that the case mortality was very small. The disease should be compulsorily notifiable, and this notification should be insisted on now before an epidemic occurred. The Section should urge this being done.

In reply, Dr. Falkiner said that with regard to complications of influenza in previous epidemics this was a point on which he could not give any information.

In this epidemic there were a few cases of death from cerebral hæmorrhage complicating influenza. Septic pneumonia was, according to the rules of classification, kept separate and would be shown so in the report of the Registrar-General.

Lunacy Administration.

Dr. R. R. Leeper read a Note on Lunacy Administration in Ireland with suggestions for reform.[a] Existing Irish Lunacy legislation dated from the early Victorian era. No legislative measures altering or amending these Acts of Parliament had since been enacted, though repeated efforts had been made and three Royal Commissions had reported on Irish Asylum Legislation. All efforts to include Ireland in the Mental Deficiency Bill failed, though, in 1906, the Royal Commission stated Ireland possessed 25,415 mentally defective persons outside of Asylums, or 66.06 per cent., as against 44.45 per cent. in England, or 34.57 per cent. in Scotland.

The Irish Public Health Council was set up without any representative of the Asylum or Lunacy Service, though one of the stated objects of the Council was the treatment of mental defects.

The continued wilful neglect of the care and control of the feeble-minded was one of the foremost causes in the production of insanity, crime and degeneracy, but nothing had been done in the way of Poor Law reform. The workhouse still flourished in Ireland—an active lunacy manufactory run by State aid.

There was no institution or colony for the treatment of epileptics in Ireland. The late Countess of Meath some years ago offered to pay half the cost of founding a colony similar to

[a] See "Dublin Journal," June, 1920. P. 169.

her institution at Godalming, Surrey, but no one could be found to pay the other half, and her proposal ended in nothing.

The President (Dr. Rowlette) said that the body of which Dr. Leeper was Secretary had given a great deal of time to lunacy administration, and whatever changes were made it was to be hoped that this body, which knew most about the matter, would be consulted. As no legislative changes in Lunacy Administration in Ireland had been made since early Victorian times, all the credit of asylum work was due to the medical profession, which was far in advance of public opinion and of legislation. He thought it a disgraceful thing that out of the Health Council of seventeen only three members of the working members of the Medical Profession were chosen. There were others, but they had been chosen from the point of view of administration, and it was absurd to think that there were only three who actually had to do with the sick. There should have been a representative from the Lunacy Service and also from Poor Law Medical Service. The Council had been set up without any consultation of the Medical Profession. It might have been a worse business but for the deputation sent up by Dr. Leeper twelve months ago. The officials were not the most important, but two other sets of people—(1) the Medical Profession and (2) the Representatives of Local Health Bodies, who would have to carry out the recommendations of the Health Council. These two bodies should have a preponderant weight at the Council. The officials were useful, but without the corporate support of the Medical Profession throughout the country it would be hopeless to try to have a progressive health administration.

His only criticism of Dr. Leeper was that he was rather late in the day. His association meeting was in November last, while the trouble began in June.

With regard to epileptics, there was no institution in the country where they could be dealt with in large numbers. During the last year and a half he had seen many epileptics who had served during the war, and there was very little provision made for them. Many of them would be greatly improved by treatment, but there was no scheme for this, and the country was paying pensions to men who could be cured, or, at any rate, taught to earn their own living. Epileptics among the civil population were in even worse plight; they were entirely neglected by Government. He knew that Dr. Leeper had a great many more suggestions to make, and he hoped the Section would hear some of them.

Colonel Dawson thought that the alienists had kept to themselves too much. They must try to educate their professional brethren and through them the general public, because as long

as lunacy was regarded as a hole and corner part of the profession, with its main idea and aim to keep the lunatic out of sight, nothing could be done. In their speciality all the improvements had come from within, and though in some ways this was something to be proud of it would be better if some came from without, as this would show public interest in the matter.

Dr. Leeper had touched on matters which urgently required amendment, the most urgent being undoubtedly congenital mental defect. He had had great opportunity of studying the matter. The Medico-Psychological Association and his Department tried to get the Mental Deficiency Act applied to Ireland but without avail. There was at present no Act at all dealing with mental deficiency. Dr. Hubert Bond was sent over during the war to see about an institution for epileptic soldiers, to be used afterwards for the civil population. The matter was discussed with Sir William Bernard, Under-Secretary at that time, and many others, but had merely dropped.

As regarded the number of epileptics that would have to be provided for, it would be rather hard to tell. People who had a fit only once a month or six weeks tried to keep it dark, and so kept on their work. In Dublin it was easier to find out that a man had been in an asylum than to find out that he had fits.

At first he thought it would be necessary to have accommodation for 400 epileptics, but now he thought a smaller place would suffice, provided that enlargements could be made, if necessary, later on. It need not be a very expensive affair—blocks of buildings on a large farm; the patients would work the farm. Epileptic soldiers could thus be made self-supporting and comfortable, instead of being left in the miserable condition in which many of them were at present.

Sir John Moore said that as a member of the Irish Health Council he would like to remind Dr. Leeper and Col. Dawson that the present arrangement was only temporary. The existing Health Council had shown the greatest and keenest interest in the very matters that had been discussed, and had asked the alienists to meet them, and there was very little doubt that in the provision for a permanent Health Council the speciality would be represented. He regretted that more alienists had not attended this meeting.

Dr. Kirkpatrick hoped that the greatest publicity would be given to this paper, especially at a time when the Government was proposing to deal with the administration of the country it would be well for them to realise that their troubles were due to their shortcomings in the past.

There had been no change for the past eighty years, and that seemed to him as great an accusation as could be brought against any Government in the world. No one could say a word

against the way the asylums had been managed. Treatment was as good in this country as in any other, but all the improvements had been made against the Government rather than by the Government.

What greater accusation could be brought against any Government than that of the neglect of this great mass of people who are unable to take care of themselves.

A great deal has been said about the mentally defective children who were not insane but merely mentally unhealthy. These children have been allowed to grow up without the State taking any steps to prevent them becoming criminals. This was a matter above all party politics; it was an accusation against the British Government of this country.

He urged that Dr. Leeper's short note should be distributed broadcast not only in this country but through the whole Empire.

Dr. Webb wished to urge the case of the feeble-minded children whom she came across in the hospital out-patient department. Would it be a good thing to try and approach the education authorities, as the Health Council did not seem to be responsive. Would it not be possible to get an outdoor school where these children could be taught and brought up as useful citizens, instead of leaving them to become a nuisance to the State and to everyone concerned.

Dr. Leeper, in reply, said that he had given evidence on Commissions during 31 years and nothing had been done or seemed likely to be done—the evidence adorning a pigeon hole for ever in some Government cloister! He agreed with what had been said by Dr. Kirkpatrick and by Dr. Webb. Mentally defective children were not provided for or taught any trade by which they could be saved from degradation and crime, to which they are fated by the administration of the country. A child born in a workhouse is educated by the State system into a life of crime, for which this State training is excellent. This child was probably illegitimate, and when it came to puberty it became the parent of more illegitimates born in the workhouse..

Epileptics ought at least to be in special wards and not with lunatics. In one place he had visited, 30 to 40 epileptics lived together, cared for by a resident medical officer. No asylum should exist without a resident medical staff; if it did it became a jail and ceased to be an hospital. Lunacy should be generally recognised as a definite medical disease. The mediæval idea was that lunacy was a possession of the devil, and the Government seemed to think that a lunatic was a criminal. A woman in a maternity hospital in Ireland suffering from puerperal insanity had to be brought before a magistrate before she could be treated for her condition.

OBITUARY.

BOYD, JOHN CRAIG. Died August 14, 1920. Born 1845. Educated at Trinity College, Dublin; B.A., 1866; M.B., 1869; M.Ch., 1870; Surgeon to the County Donegal Infirmary, Lifford; late Medical Officer of Health, Strabane Rural Sanitary District; Medical Officer of the Strabane Workhouse for forty-four years. Died at Lifford.

BRADSHAW, SAMUEL JOHN M'CLEAN. Died August 14, 1920. Born 1871. Educated at Trinity College, Dublin, and the London Hospital; B.A., 1894; B.A.O., B.Ch., M.B., 1895; M.D., 1899, Dub.; Fellow of the Royal Academy of Medicine in Ireland; Temporary Captain, R.A.M.C.; late House Physician, Brompton Hospital for Consumptives. Died at Monkstown, Co. Dublin.

DICK, SIR JAMES NICHOLAS. Died July 12, 1920. Born 1831. L.R.C.S. Edin., 1853; L., 1878; M.K.Q.C.P.I., 1879; Assistant Surgeon, Royal Navy, 1853; Director, General Medical Department of the Navy, 1888-1898; served in the Crimea, Abyssinian War and Bombardment of Alexandria; created C.B. in 1887, and K.C.B. in 1895; Inspector-General of Hospitals and Fleets.

KERR, JAMES KING. Died August 10, 1920. Born at Randalstown, Co. Antrim, October 31, 1845. Educated at Queen's College, Belfast, Guy's and St. Thomas's Hospitals, London; M.D., M.Ch., 1871, Q.U.I.; Alderman and J.P., Belfast. Died in Belfast.

McCARTHY, PHILIP AUGUSTINE. Died July 11, 1920. Educated at Queen's College, Cork, and Guy's Hospital, London; M.D., M.Ch., 1884; M.A.O., 1885, R.U.I.; L.S.A., Lond., 1884; Captain, R.A.M.C. Died at Swords, Co. Dublin.

McKENNA, MICHAEL MATHEWS. Died July 29, 1920. Educated at Catholic University School, Dublin; L.R.C.S.I., 1896; L.A.H., 1896; L.P.S.I. Died at Rathgar Road, Dublin.

MAYBERRY, FRANCIS GEORGE. Died August 6, 1920. Born 1847. Educated in Trinity College, Dublin; B.A., 1868; M.B., 1870; M.Ch., 1871; Consulting Medical Officer of Health, Kenmare Union; formerly Medical Officer of Health, Kenmare Dispensary District; J.P., Co. Kerry. Died at Kenmare.

NUNN, RICHARD. Died August 17, 1920. Educated at Trinity College, Dublin; B.A., 1881; M.B., B.Ch., 1883; M.D., 1886; late Professor of Anatomy, Oregon University Medical School; Professor of Diseases of the Eye, Ear, Nose and Throat, Oregon University. Died at Oregon.

REEDE, AUGUSTUS KEPPEL JOSEPH. Died July 19, 1920. Educated at the Carmichael College, Dublin, and at Edinburgh; L.R.C.P. & S. Edin., 1885; L.A.H. Dub., 1886. Died at Bristol.

SHACKLETON, HENRY. Died August 26, 1920. Born Co. Kildare, 1847. Educated at Trinity College, Dublin; B.A., 1868; M.B., M.D., 1884, Dub.; M.R.C.S. Eng., 1884; L. Mid., R.C.P.I., 1884; formerly Prosector in Anatomy, Trinity College, Dublin. Died in London.

SMYTH, ROBERT MILLNER. Died June 23, 1920. Born in Dublin, December 10, 1868. Educated at the Carmichael College, Dublin; L.R.C.P. & S.I., 1889; F.R.C.S.I., 1904; Lt.-Col. South African Medical Corps; Assistant Medical Superintendent, Natal Government Hospital, Durban; O.B.E. Died at Durban.

WHITE, SINCLAIR. Died August 8, 1920. Born 1858. Educated at Queen's College, Galway; M.D., M.Ch., 1879, R.U.I., F.R.C.S. Eng., 1884; D.P.H. Cantab., 1888; formerly Professor of Surgery, University of Sheffield, and Surgeon, Sheffield Royal Hospital, and Medical Officer of Health of Sheffield; Lt.-Colonel, R.A.M.C.T; Commander of the British Empire. Died at Bournemouth.

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TWO MEDIASTINAL CASES.

By JOHN SPEARS.

Case I.—Mr. H., aged sixty-eight, a commercial agent. Date 17th July, 1920. His chief complaint was of a constant pain in his right shoulder. He stated that this pain began in October, 1919, quite sharply, and that he had suffered "night and day ever since." The pain was of an acute character, and did not go down his arm or up his neck. He was a heavily-built man—212 lbs. weight—and he acknowledged to a past history of alcohol, but had been a teetotaller for some years. He was married, but had no family. At the time of examination his breathing was of a somewhat jerky character (respirations 21). He had a harsh, short cough, of which he did not complain, usually not productive, but he stated that he had seen some specks of blood about three weeks previously in his sputum. His voice was low-

pitched, but not hoarse, and there was no difficulty or pain on swallowing. His hands and face were cyanosed, and the right ear and right side of neck were slightly œdematous. The veins on the same side were congested. On further examination the painful area was in the supra-scapular region close to the shoulder, localised to about three inches square. There was no local physical sign—no crepitus in the shoulder joint, and the pain was not increased by moving the arm. The expansion of the right thorax was one inch less than the left, and there was a definite area of dulness from the third to the fifth right ribs, extending from the mid-sternal to the mid-clavicular line. Posteriorly there was an area of dulness not so well defined around the root of the lung. Breath sounds were not well marked over this area anteriorly, and were very indistinct posteriorly. There were a few coarse crepitations in both lungs, and vocal fremitus and vocal resonance were increased slightly. There was no bulging, no pulsation, no tracheal tug, no displacement of liver, the pupils were somewhat unequal. He had a well marked mitral regurgitant murmur, conducted round into the axilla. Apex beat was on the nipple line. Blood-pressure was 150 mm. systolic and 85 mm. diastolic (both arms). Blood examination: Hb. 100; count normal; differential count normal. Urine contained a trace of albumen. A preliminary diagnosis of a mediastinal tumour was made pending *x*-ray report.

First X-ray Report, 19th July, 1920.

"There is a large, dense, irregular-shaped mass of shadow springing from the root of the right lung and extending outwards as far as the lateral wall of the thorax. There was no illumination of this area on deep inspiration. The left lung is normal. The *x*-ray appearance suggests a lymph-sarcoma. There is slight general dilatation of the arch of the aorta, and the heart is slightly enlarged."

It was decided to treat him with *x*-rays. His condition gradually became worse. In a few days he complained of

occasional pains in his chest, his cough was troublesome, and he became breathless on the least exertion. On the 28th his right arm was œdematous, but there was no difference between the radial pulses. On August 3rd both arms and both legs were much swollen. The area of dulness was greatly increased. There was marked inequality of pupils and dilatation of the superficial epigastric veins. Cyanosis was more marked, there were numerous coarse râles and rhonchi in the chest, and he complained of severe spasms of pain. There were indications of a small effusion. His *x*-ray treatment ended on August 5th, when the following report was given :—

Second X-ray Report, 5th August, 1920.

"With the exception of a very small area in the lower part of the lung the whole of the right chest is uniformly opaque. The appearance is such as one sees in cases of large pleural effusions or empyema, except that one would not expect to find any translucent area in the lower portion of the lung field. The change since the first examination is very marked. I have never before seen a malignant growth (if such it is) progress so rapidly."

It was then decided to tap and insert radium, but the patient had a very severe hæmorrhage, and died on August 7th.

Case II.—Miss B., aged fifty. Date 26th July, 1920. She gave a long history of rheumatism, and complained of severe headache, attacks of giddiness, difficulty in breathing when lying down, and of a feeling of tightness across the chest as if wearing a very tight corset, and a sensation of weight under her left breast. She had a slight cough, some expectoration, and was very easily fatigued. She stated that she had had some attacks of vomiting, was constipated, and frequently had sweating attacks, palpitation, and a peculiar feeling of heat in the soles of her feet, "as if they had been rubbed with menthol." Her chief worry was sleeplessness and her peculiar tired feeling. On

examination, her general nutrition was good, expansion diminished on the right side. On percussion there was a large area of dulness extending from two inches to the right of the sternum to the left nipple line—most marked between the second and fourth ribs on both sides (she complained that the percussion was painful). Auscultation revealed nothing except indistinct breath sounds. Blood-pressure 136 systolic, 110 diastolic (both arms). Blood examination normal; urine, &c., normal. Deep reflexes were increased. X-ray report as follows :—

" *X-ray Examination of the Thorax.*—Both lungs are of equal transparency, while neither lung brightens on inspiration, as the expansion is distinctly limited. The edge of the mediastinal shadow at the level of the roots of both lungs is irregular, and the glands are enlarged and quite unusually opaque. I have never seen a similar case presenting a bilateral appearance, but it seems to me to suggest very strongly a malignant tumour involving both lungs, as a similar appearance in one lung only undoubtedly points to this conclusion."

It was decided to give a course of *x*-ray treatment. During August there was practically no change. Her insomnia was difficult to treat, one-quarter grain of morphia only giving two to three hours' rest—paraldehyde proving the most beneficial. She frequently complained that solid food seemed to stick half-way down. On the 31st August she had a very severe attack of vomiting, and complained of intense substernal pain. The left chest was now more resonant, but she felt weaker. She still complained of the same sensations. On September 15th *x*-ray report was as follows :—

" As compared with the examination of July 27th, the lungs appear to brighten more on inspiration; and though the mediastinal glands are still very opaque they seem less so, and the margins of the mediastinal shadow are more regular. The expansion is less limited than in the previous examination."

At present she is greatly improved. The feeling of weight and pressure is less, and she feels stronger.

The Wassermann reaction in both these cases was negative.

Mediastinal tumours are usually classified as benign and malignant—the latter being of more frequent occurrence.

(I.) *Benign*—Fibromata, lipomata, enlarged lymph glands, dermoid cysts, chondromata.

(II.) *Malignant* (usually primary)—Carcinomata and sarcomata.

In addition to the above, a certain group of pressure symptoms may be produced by Hodgkins's disease, substernal goitre, persistent thymus (most frequent in infancy), aneurysm, gumma, Potts' disease, tuberculosis. Three cases of dermoid cysts have been diagnosed (Mayo and Brown) by the presence of hair, teeth, &c., in the sputum.

There does not appear to be any differential point between an aneurysm and a tumour in many cases, and diagnosis rests with *x*-ray. Blood-pressure should be estimated in both arms. Hodgkins's disease, with its pluriglandular enlargement, pyrexia, weakness, enlarged spleen, &c., and possible opportunities of a microscopic section, is readily differentiated.

Lympho-sarcoma has usually metastases. *X*-ray and a section from an excised gland may clinch the diagnosis. Sarcomata are more common in the anterior mediastinum, possibly carcinomata in the posterior.

Gummata produce few symptoms, and may be excluded by Wassermann reaction, history, &c.

The symptoms of a mediastinal tumour depend upon its position and size. A tumour in the posterior mediastinum produces pressure symptoms, late physical signs being predominant, whereas symptoms are early if the growth be in the anterior and superior mediastinum. Blair gives the following table (modified by Lemon) of the common pressure symptoms and signs :—

COMMON SYMPTOMS AND SIGNS OF PRESSURE IN THE MEDIASTINUM.

1. Esophagus ...	Dysphagia—(*a*) persistent when due to direct pressure (*b*) transient when due to irritation of the recurrent laryngeal nerve
2. Trachea ...	Brazen cough (gander cough); dyspnea—often only on exertion; stridor, with bellows breathing and indrawn manubrium sterni; bronchorrhea; hemoptysis
3. Root of lung and pleura	Difficult and insufficient aeration like phthisis; pulmonary collapse, consolidation or chronic pneumonia. May vary from time to time with variation in pressure
4. Nerve trunks ...	Neuralgic type of pain; paroxysmal and intermittent
5. Pulmonary artery	Systolic murmur, dilated right heart
6. Superior vena cava	Cyanosis—edema of head and neck and upper extremities. Collaterals do not pulsate as in cardiac disease
7. Right pulmonary veins	Hydrothorax and collapse of lung
8. Thoracic duct ...	Marasmus
9. Cardiac plexus ...	Anginal attacks—simulating angina pectoris; 3rd cervical to 3rd dorsal segmental distribution
10. Sympathetic nerves	Dilated pupils, indicating irritation; contracted pupils, indicating paralysis; no loss of reflex, except in lues; unilateral sweating, flushing or pallor
11. Vagus nerves ...	Dyspepsia, nausea, vomiting, dyspnea, hiccough
12. Recurrent laryngeal nerves	Hoarseness, aphonia, spasm, or paralysis of the left vocal cord—suffocation
13. Right recurrent laryngeal nerves	Right cord paralysis
14. Phrenic nerves ...	Unilateral paralysis of the diaphragm. Pain about the neck just above the clavicle

In the two cases mentioned in this note, the first was considered to be a sarcoma and the second is very doubtful.

ELBOWS ANKYLOSED AND FLAIL.[a]

By R. ATKINSON STONEY, F.R.C.S.I.;

Surgeon to the Royal City of Dublin Hospital; Surgical Specialist, Pensions Board, Dublin Area.

I HAVE chosen the subject of ankylosed and flail elbows to talk to you about this afternoon for two reasons—first, because a considerable number of such cases are met with at the Pension Boards; and, secondly, because individual opinions vary so greatly as to their treatment and the advisability or not of operative intervention. I might add, as a third reason, that it is a subject in which I am particularly interested.

As far back as my early student days I was greatly impressed one morning in hospital by a case shown to us by the late Surgeon Croly. It was a man whose left elbow he had excised some years before for ankylosis resulting from injury. After the operation the patient had continued his occupation as an able-bodied seaman, and he stated that he could climb a rope as well as ever. He proceeded to demonstrate the strength of his arm by pulling various members of the class round the ward with his arm fully flexed, and he offered to demonstrate his power of extension by knocking one of us down. This offer, however, was not accepted.

The recognised teaching in ordinary surgical practice before the war was that excision was a suitable operation for the treatment of ankylosed elbows, and that the results obtained, though somewhat variable, were in the majority of cases good, and in some cases restored almost perfect function.

When I first went out to France, in December, 1914, I was quite prepared to put into practice the precepts which I had been accustomed both to teach and follow, and I was greatly astonished to find that, among the

[a] Read before the Medical Pensions Board Association, Dublin Area, November 24, 1919.

French at least, the operation of excision of the elbow for gun-shot wounds had fallen into great disrepute, and not only was not advised by the authorities, but was to a large extent banned. On making enquiries I found that the operation as practised was frequently followed by the production of a flail elbow, so that the patient's condition, so far from being improved, was made distinctly worse.

In spite of this I was so convinced of the correctness of my opinion that I did not hesitate to undertake the operation, when a suitable opportunity offered; and the results, as shown by the following very brief record of some cases, are sufficient, I think, to prove my contention.

Case I.—A Zouave was shot on September 20th, 1914. The missile, probably a deformed bullet, struck the left elbow joint, smashing the bones extensively. When first seen by me in December, 1914, he was still discharging from several sinuses on the posterior aspect of the arm. These healed up under treatment. An *x*-ray photograph showed bony ankylosis of the joint at an obtuse angle, with great deformity of the lower end of the humerus and upper ends of the radius and ulna, with numerous small particles of metal embedded in the bones. Operation was performed on January 15th, 1915. About one inch of the humerus was removed and the olecranon was prized off, and the upper end of the ulna was trimmed. No attempt was made to remove the ends of the bones of the forearm along the normal saw cuts owing to the great destruction and irregular formation of the bone ends and the fear of opening up quiescent septic foci in the neighbourhood of the embedded pieces of metal. In spite of slight infection, the wound rapidly healed. Regular massage and electrical treatment were started, and in about six weeks the patient had voluntary movement of about 110°. This case was complicated by ulnar paralysis, and, owing to osseous union between the upper ends of the bones of the forearm, pronation and supination were greatly limited. I saw this patient at various times on my later visits to France, and found him one year working in a munition factory and another year in a stone-mason's yard. On the last occa-

sion I saw him he could flex the elbow to 40° and extend it to 160°, and could perform both these movements against very considerable resistance, and, though handicapped by the results of injury to the ulnar nerve, he had a very useful arm.

Case II.—A soldier, wounded 16th March, 1916, by a fragment of shell. There was bony ankylosis of the right elbow at an angle of 130°. Pronation and supination were completely lost as well as flexion and extension. Operation was performed on 27th July, 1916. The lower end of the humerus and the upper ends of the radius and ulna were removed. This case healed without infection, and massage and electrical treatment were started ten days after the operation, and by the end of a month the patient was able to lift his hand to his mouth. When I last saw this patient, he had voluntary movement through an angle of 130°; could feed himself, and write with the right hand, and had some power of pronation and supination.

Case III.—A soldier, wounded by a grenade in the left elbow on 25th February, 1916. There was bony ankylosis with irregularity of the articular surfaces, and fragments and dust of the grenade scattered through the bones and soft tissues. All the sinuses which had been present were healed. Operation was performed on August 31st, 1916. The end of the humerus was sawn off above the condyles; the head of the radius and articular bearing surface of the ulna were also removed. In this case infection occurred, but in spite of this the parts healed up, and good voluntary movement was obtained.

Apparently very much the same opinion was formed by the British authorities. This is shown by the very large number of soldiers who present themselves from time to time at the Pension Boards with elbows ankylosed at various angles, where not only has no operation been done, but the man has even been advised not to have an operation performed, as no improvement in his condition could be expected. I have met with cases where this advice has been given by well-known surgeons in London, Edinburgh

and even Dublin. Among the French the advice given was to get ankylosis in the position that would be most useful to the patient. This was not always in what is usually accepted as the optimum position—that is, at a right angle or a little less. The advantage of this position is, of course, that the hand can be brought up to the mouth or close to it, so as to be useful for feeding purposes, but it also allows the patient to use his hand for writing and for working at a table. An objection is that the patient cannot easily put his hand into his trousers pocket, and it is not a good position for a labourer, especially if it is the left arm. The usual French practice in the cases of agricultural labourers was to consider an angle of 130° to 150° the optimum position for the left arm. It was even advised that if the angle was not good that a linear osteotomy of the humerus should be performed immediately above the elbow, and the position changed, and ankylosis in the new position allowed to take place. What is the reason for this practice, which must be looked upon as a retrogression? It is probably twofold—the extensive destruction of the parts and the very general prevalence of sepsis, both of which factors greatly diminish the prospects of a good result after excision of the elbow.

Let us consider in turn these two factors which detract from the success of the operation. First, extensive destruction of the parts. This may be a destruction of the bones, the muscles, or specialised structures, such as nerves or blood-vessels. No matter how extensive the injury and destruction of the bones may be, it will not interfere with the success of an excision if ankylosis has already taken place, for this proves that there is enough bone present to allow of some being taken away. The cases where this factor renders the hopes of successful treatment futile are not cases of ankylosis, but cases of flail elbow.

When there is extensive destruction and loss of the muscles, the condition is more serious, and the triceps muscle and its expansion into the deep fascia of the back of the forearm is most important, and unless there is a prospect of being able to attach the triceps muscle to the

forearm the operation of excision can hold out no hope of improving the condition, but is liable to make matters worse by producing that bugbear, a flail elbow.

It is surprising, however, in what a number of cases care and attention to detail in the operation will enable one to eliminate this unfortunate result.

Where there is extensive injury to the nerves, ulnar, musculo-spiral, or its most important part, the posterior interosseous, or more rarely the median, it will not be worth while to produce a moveable elbow if the hand is paralysed and more or less useless. The nerve most frequently injured is the ulnar, but injury to this nerve alone does not at all contraindicate excision, as even with ulnar paralysis the hand still has considerable power and use. Injury to the blood-vessels is not an important complication of ankylosis—being usually associated with other severe lesions necessitating amputation.

Let us now turn to the other main factor—sepsis. This, though of great importance in the early stages, and often necessitating the postponement of excision, is not of such importance in the later stages in which we usually see these cases now. As a rule, the case has been soundly healed for months or years, and though there is even still a danger of the recrudescence of sepsis by reopening the injured parts, still this can be largely counteracted by details in surgical technique, and even if sepsis does occur, it by no means necessitates failure in the result of the operation, though it may considerably delay healing and prolong the period of treatment.

I do not intend to enter into the details of the operation or after-treatment, beyond stating that in order to obtain a satisfactory result, it is most important to pay great attention to small details of surgical technique—the main points being—

(1) To remove as little of the bones of the forearm as possible; the amount of humerus removed is much less important.

(2) To preserve intact the insertion of the triceps into

the periosteum and deep fascia of the forearm, or to make a new union between the two where this has been destroyed.

(3) To start passive movements at an early date, and

(4) To make use of electrical treatment to recover the voluntary power of the muscles of the upper arm, which has been lost from their continued disuse.

If an operation is performed carefully and attention is paid to these details, any surgeon of moderate capabilities and experience should obtain excellent results from the operation of excision of the elbow in a large proportion of cases of ankylosis resulting from gun-shot injuries, and I have no hesitation in stating that if such operations were performed in suitable cases the disability would, in a large proportion, be very considerably reduced.

If not trespassing too much on your time, gentlemen, I would like to say a few words on the very closely related condition of flail elbow.

These may be the direct result of the destruction caused by the original injury, and in such case unavoidable. It may, however, be the result of an operation for excision, and as such is due to the adoption of this operation in an unsuitable case or to faulty technique, and, therefore, avoidable.

When, however, this unfortunate condition has occurred, can anything be done to alleviate it? Undoubtedly a good deal may be done by the fitting of suitable mechanical apparatuses to give stability to the elbow, and so allow the hand to be made use of. But in some cases, at least, something may be done to stabilise the joint and even to give the power of voluntary movement. It may be possible to attach the triceps to the forearm; by suture to reduce the interval between the humerus and radius and ulna, or even to form an artificial capsule for a new joint, perhaps assisted by union of the bones with a freely flexible material. While I was in France I operated on two such cases with fairly successful results.

Case IV.—A soldier, aged thirty-five, was wounded on

August 3rd, 1917, by a shell splinter. There was extensive destruction of the lower third of the right humerus, and the articulation of the elbow was opened. An operation was performed at the front, when a large amount of the lower end of the humerus was removed and a quantity of injured muscle excised. When I saw the case first, in June, 1918, the elbow was completely flail, the upper arm was between two and three inches shorter than the left, there was extensive scarring round the elbow, and the pointed lower end of the shaft of the humerus projected under the thinned skin of the outside of the arm when the patient attempted to flex the elbow. There was also a small fistula over the lower end of the humerus—altogether not a promising case for operation.

On June 15th, 1918, an operation was performed and the sinus was completely excised. Half an inch of the pointed end of the humerus was removed, in order to get a broad, flat surface. A new bed was formed in the dense scar tissue for the humerus, and this bone was united to the ulna by a four-fold strand of silk-worm gut. The remains of the triceps, deep fascia, scar tissue and periosteum were sutured in two vertical layers by catgut sutures behind the humerus, and the elbow was flexed to an angle of 75°, and put up with a thick layer of cotton wool and a bandage. In spite of some suppuration and the extrusion of the silk-worm gut, the wound closed, and the patient left hospital on September 15th with a fair degree of power and movement in the right elbow. He was able to touch his head, feed himself, and even lift small weights.

Case V.—A soldier, aged twenty-seven, wounded June 6th, 1918. Had his right elbow excised at the front, and was admitted to hospital on October 2nd with a flail elbow. The wound was only recently cicatrised, and the *x*-rays showed that the bones had been united with thin wire which had broken. The elbow was flail, and there was no power of voluntary movement, and on any attempt at flexion the lower end of the humerus projected under the skin. Passive movement in a lateral direction was very free, almost to a right angle. On October 14th an opera-

tion was performed on the same lines as in the previous cases. The wound was soundly healed by the eighth day. Massage, movements, and electrical treatment were started at the end of ten days, and five weeks after the operation the patient left hospital with good voluntary movement of his elbow. He could put his hand to his mouth, and was able to feed himself.

My last words to you, gentlemen, this evening are in every case of ankylosed or flail elbow that you meet do not at once conclude that nothing can be done for it, except possibly the ordering of a mechanical appliance; but examine the case carefully, and if any of you do not feel confident to form an opinion yourselves, get advice, and decide whether or not it is a case in which operation holds out a reasonable hope of lessening the patient's disability, as by this means a large number of men suffering from severe disablement whose arms are of little use to them will be restored to a large measure of capacity and become again useful members of the community.

REVIEWS.

Diabetic Dietary and Cookery. By P. J. Cammidge, M.D. University of London Press. 1920. Price 10s. 6d.

In this volume the principles underlying the modern treatment of diabetes mellitus are briefly reviewed. The arrangement of diet with reference to the individual patient is emphasised, as also is the importance of education and co-operation of the patient. In the dietetic treatment of diabetes the author believes that the first essential for success is that the urine should be permanently sugar free, and that the blood sugar should be kept within normal limits. It is refreshing to find the latter point so strongly stated. It is surprising that the rather loose observations of Guelpa, of Paris, are given more prominence than the monumental, painstaking and laborious studies of Allen of the Rockefeller Institute. As a matter of fact, Guelpa's observations were based on a false premises, and the principles of treatment (if, indeed, they can be so called) elaborated by Guelpa are fundamentally different from those formulated by F. M. Allen. The author believes with Allen that loss of weight in diabetes is, within limits, an advantage. In arranging diets the author has devised a system of interchangeable "rations" of proteins, fats and carbohydrates. The system seems to us unnecessarily complicated and rather loose. We personally prefer the use of simple diet tables, giving the percentage composition of ordinary foodstuffs.

Cammidge favours a system of intermittent fasting rather than one prolonged fast of eight or ten days to get the blood-sugar normal, a point of view with which we generally agree. The method of again building up the diet is described. On the whole, the methods are similar to those originally described by Allen.

There is an excellent section on testing the urine and

blood for sugar, but we personally prefer a colorimetric method for the latter to that of Cammidge. There are useful notes on diabetes in children, elderly patients, and on atypical forms of diabetes. Complications are well discussed.

The remainder of the volume deals with aphorisms and precepts for diabetics and with diabetic cookery. The latter section is really excellent for the amount of valuable information contained therein, especially in relation to the cooking of vegetables. There are a number of cookery recipes appended.

HENRY F. MOORE.

Transactions of the Section on Genito-Urinary Diseases of the American Medical Association. American Medical Association Press. 1918.

THIS volume contains the papers read at the American Medical Association, with an abstract of the discussions. There is a wide range of subjects relating to genito-urinary surgery. The paper on the relation between intestinal stasis and colon bacilluria is suggestive, and reminds "urologists" that the patient has more than kidneys and a prostate. The urethroscopic appearances of the posterior urethra are the subject of another paper in the discussion, on which useful hints on the treatment of vesiculitis can be gleaned. The paper on the kidney in pregnancy is good, and contains a valuable bibliography. Experimental hydronephrosis is well described, while the technique of ureterovesical anastomosis is given in detail. The discussions show the interest recently taken in America in ureteral strictures; some observers seem to think that difficulty in passing a ureteral catheter denotes a stricture, dilatation of the ureter above the impediment is the only diagnostic feature in this rather uncommon lesion. Taken as a whole, these papers show the trend of thought in

American genito-urinary circles. There is the searching after some new thing, but it is not altogether at the expense of research on such subjects as the renal complications of pregnancy and the treatment of genital tuberculosis.

Massage and the Swedish Movements. By Karrs W. Ostrom. Eighth Edition.

This little text-book is well known to teachers and students of massage and medical gymnastics. The present edition has been edited by Mr. P. Silfoorberg, G.D., at the request of the late Mr. Ostrom's publishers, and contains some additional suggestions on treatment as well as a short article on dislocations written from his own viewpoint. The movements used in massage and the original Swedish exercises are well described, and the illustrations—sixteen of which have been added in the present edition—greatly increase the value of the book. The instructions as to the various treatments and their effects are sound and admirably concise, and as such will be found extremely useful by beginners.

Anatomy: Descriptive and Applied. By Henry Gray. Twenty-first Edition. Edited by Professor Howden. London: Longmans, Green & Co. 1920.

It is now sixty-two years since Gray published the first edition of his Anatomy, which then ran into 750 pages. The twenty-first, like the two previous editions, adopts the Basle nomenclature, which has never been popular with the clinical teachers in Dublin.

The section on Embryology is very comprehensive, and in it we find the latest known details of the early fertilised

ovum most interestingly described. Stress is laid on the *rôle* of the chromosomes in fertilisation of the ovum. In lower forms of life, when the mature ovum is mechanically or chemically stimulated into producing a new being, the sex of that being is always male. The development of a female necessitates the presence of a spermatozoon containing a specialised chromosome.

The way in which the applied anatomy is described gives the student a very live interest in the part.

The diagrams and drawings throughout are excellent. We have no hesitation in saying that as a text-book of descriptive anatomy it is unsurpassed.

I. W. C.

Diathermy in Medical and Surgical Practice. By Claude Saberton. London : Cassell & Co. 1920. Pp. 138. Illus. 33. Price 7s. 6d. net.

Not every practitioner understands the implements he uses or the *rationale* of his treatment, and relatively few of those who employ electricity are sufficiently trained in the principles of its application to the human body. This book sets out to explain the meaning of diathermy and to describe the apparatus necessary for its various applications. It ought to be of very considerable help to those who desire to use diathermy; but, though simply written, some knowledge of electricity is necessary to follow the technical descriptions, which are suggestive rather than detailed. The chief value of the book lies in the chapters on the medical and surgical applications of diathermy, for they contain the indications for this method of treatment. No practitioner would waste time by reading this part of the book, and his patients would gain by the perusal. There is no doubt that diathermy will accomplish more than the knife with greater safety in many cases of superficial lesions, while its usefulness in tumours of the mouth

and bladder is now beyond dispute. The effects of high-frequency currents and ionisation on diseases of the circulatory and nervous systems are described.

The book is a useful one and of a convenient size. It repays the time taken for its perusal.

The Systematic Treatment of Gonorrhœa in the Male. By Norman Lumb. Second Edition. London: H. K. Lewis & Co. Cr. 8vo. Pp. viii + 123. Price 5s. net.

The aim of this book is to give practical details of methods of treatment which have been tested in a large number of cases during the war. The author gives a clear description of the course of the disease, the examination of the patient, and the treatment indicated. The book is one which might be read with advantage by those who have had no experience in the management of gonorrhœal cases. The chapter on the examination of the urine explains more clearly than usual the appearances commonly observed. We fear it is not possible to apply methods evolved in military practice in their entirety to civilians. The latter will not rest in bed during the acute stage of the disease. In common with most observers, the author believes that permanganate of potash is as efficient, if not more so, than more expensive and more fashionable drugs. His experiences with ionisation do not encourage others to attempt that form of treatment. With vaccines he has had considerable success. The volume gives what may be taken as the usual established treatment of gonorrhœa, and no one will go far wrong by following its teaching. More might have been said of vesiculitis, for not every case requires posterior urethroscopy and highly specialised treatment. The last chapter, on the physiology of the patient and the test of cure, is good, but might be elaborated with advantage.

MEDICAL EDUCATION

THE UNIVERSITIES.

University of Dublin, Trinity College (School of Physic).

Matriculation.—In order to join the School of Physic students pass a matriculation examination. University students take the Entrance of Trinity College and a Junior Freshman Term or a special Medical Preliminary; Extern Students, any examination recognised by the General Medical Council. The Winter Courses begin on October 1st.

Degrees in Medicine (*M.B.*), *Surgery* (*B.Ch.*), *and Midwifery* (*B.A.O.*).—Candidates for these degrees must be of B.A. standing and must be for at least five academic years on the books of the Medical School, reckoned from the date of matriculation. The Arts course may be taken concurrently with the Medical course, and the B.A. degree need not be taken before the final medical examinations, but the Medical degrees are not conferred without the Arts degree. The following courses must be attended:—(1) Lectures—Botany, Zoology, Physics and Practical Physics, Systematic, Descriptive and Applied Anatomy, Chemistry and Practical Chemistry, Histology, Physiology and Practical Physiology, Practice of Medicine, Midwifery, Pathology, Materia Medica and Therapeutics, Medical Jurisprudence and Hygiene, Surgery and Operative Surgery; (2) three courses of nine months' attendance on the Clinical Lectures of Sir Patrick Dun's or other recognised Hospital; (3) Practical Vaccination, one month's instruction; (4) Mental Disease, three months; (5) Practical Midwifery with Clinical Lectures, including not less than 20 personally conducted cases, six months; (6) Ophthalmic Surgery, three months. Three

groups of examinations have to be passed. Preliminary Scientific Examination, including Physics and Chemistry, Botany, and Zoology. The Intermediate Medical, Part I., including Anatomy and Physiology, and Part II., including Applied Anatomy and Applied Physiology; and the Final Examination, which is divided into Part I., Materia Medica, Hygiene and Jurisprudence, and Pathology; and Part II., Medicine, including Clinical, Surgery, Midwifery, Gynæcology, Mental Diseases, Operations, and Clinical Ophthalmology. Part I. may be passed in the fourth year and Part II. completed at the end of the fifth year.

Doctor in Medicine.—A Doctor in Medicine must have passed all the qualifying examinations and must be a B.A. of three years' standing. He must also read and discuss a thesis before the Regius Professor of Physic.

Master in Surgery.—A Master in Surgery must be a Bachelor in Surgery of the University of Dublin of not less than three years' standing, and must produce satisfactory evidence of having been engaged for not less than two years from the date of his registration in the study, or study and practice, of his profession. He must then pass a special examination.

Master in Obstetric Science.—A Master in Obstetric Science must be a Bachelor of two years' standing and produce evidence of having been engaged in the study of Obstetric Medicine and Surgery during two years. He is then required to pass a special examination.

Diploma in Gynæcology and Obstetrics.—A post-graduate diploma is conferred upon registered medical practitioners who take a six months' course at the Rotunda Hospital, a six months' course in Trinity College, and then pass a special examination.

Bachelor in Dental Science and Master in Dental Science.—The regulations under which these degrees are awarded can be obtained by application to the Registrar of the School of Physic.

All Degrees and Courses of Instruction are open to women students.

Clinical Instruction.—The hospital facilities for clinical instruction available in Dublin will be described below.

The National University of Ireland.

Matriculation.—All students intending to proceed to the medical degree of the University of Ireland must pass a matriculation examination, the examination taking place in June and September in Dublin and at certain local centres. All students must pass in five subjects (three of which must be Irish, English, and mathematics). All students must pass in Irish except students not born in Ireland, and other students whose home residence shall have been outside Ireland during the three years immediately preceding their matriculation; but all such students will be expected to attend a course of instruction in Irish Literature and History prior to obtaining any degree in the University. The following are the subjects for examination:—1. Irish. 2. Latin or Greek. 3. French, German, Italian, Spanish, Portuguese, Welsh, or any other modern language approved by the Senate. 4. English. 5. Mathematics. 6. Latin, Greek, French, German, Welsh, Spanish, Italian, Portuguese, or any other modern language approved by the Senate. History and Geography (*as a composite subject*), Natural Philosophy, or Physics as an alternative, Chemistry, Botany, and for women candidates only, Physiology and Hygiene. Candidates who under the regulations are exempted from the necessity of presenting Irish as one of their subjects may present as their fifth subject either a second language or a second science subject. Students entering for degrees in Medicine or Dentistry, if already registered by the General Medical Council, may be accepted as matriculated students of the Faculty of Medicine on passing the matriculation examination in any faculty of the University.

The medical degrees granted are:—

M.B., B.Ch., and B.A.O.; and M.D., M.Ch., and M.A.O.—Printed forms of application for admission to

any medical examination may be had from "The Registrar, The National University of Ireland, Dublin."

The Constituent Colleges of the National University of Ireland at which the full curriculum for medical degrees can be obtained are University College, Dublin; University College, Cork; and University College, Galway.

University College, Dublin.

The University and the College were created by the Irish University Act, 1908, and by Charters issued in December, 1908. Former students of the Cecilia Street School of Medicine who graduated in the Royal University may become graduate members of the new College. The constitution of the College, like that of the Constituent Colleges of Cork and Galway, provides for a governing body, an academic council consisting of professors and co-opted lecturers, a body of graduate members, and a body of student members matriculated in the University. The first professors and lecturers were appointed by the Dublin Commissioners Irish Universities Act, 1908.

Matriculation.—Almost all the students of the College are matriculated students of the National University of Ireland.

University Examinations in Medicine.—The First Examination includes Physics, Chemistry, Botany, and Zoology. The examination may be taken in two parts: Part I., Physics and Chemistry; Part II., Botany and Zoology. Honours may be obtained only when both parts are taken as one examination. The Second Examination includes Anatomy and Physiology. Both must be passed at the same time. The Third Examination includes Pathology, Medical Jurisprudence and Hygiene, and Materia Medica.

Degrees of M.B., B.Ch., and B.A.O.—The Examination in Medicine, Midwifery, Surgery, and Ophthalmology includes both the theoretical and the clinical branches. No student can enter for the M.B., B.Ch., or B.A.O. until the end of the fifth year, when the curriculum has been completed. The course of study is as follows:–

First year.—Winter: Anatomy and Practical Anatomy (required for the Second Examination), Chemistry, Practical Chemistry, and Experimental Physics (with Laboratory Course). Summer: Zoology, Practical Zoology, Botany, and Practical Botany. Second year.—Winter: Anatomy, Practical Anatomy, Physiology, and Practical Physiology (physical and chemical). Summer: Anatomy, Practical Anatomy, Physiology, and Practical Histology. Third year.—Winter: Pathology, Surgery or Medicine, Hygiene, Medical Jurisprudence, and Practical Pharmacy. Summer: Materia Medica and Therapeutics, and Practical Pathology. Candidates are also required to attend a General Hospital for nine months (winter and summer). Fourth year, or fourth and fifth years.—Winter:— Medicine or Surgery (the subject to be that not taken in the third year), and Midwifery and Gynæcology. Summer: Operative Surgery, Applied Anatomy, and Ophthalmology and Otology. Candidates are also required to attend a General Hospital for nine months (winter and summer), and to take instruction in Vaccination, and three months' Fever Hospital. Fifth year.—If the Academic (Collegiate) Courses are taken as above, the Courses of the fifth year will be the following: Hospital Attendance, General Hospital, nine months; Clinical Ophthalmology and Otology, three months; Practical Midwifery and Gynæcology, six months; Mental Diseases, to be attended at a Lunatic Asylum, three months. (*Note.*—Practical Midwifery and Gynæcology may be taken in the fourth year after the Systematic Course of Midwifery, but it must not be taken concurrently with the period of attendance at Fever Hospital.) The degree of M.D. may be obtained either by examination or on published work.

Fees.—The fees for Courses may be obtained on application to the Registrar for the College publications.

Information concerning these, and the numerous scholarships and exhibitions of the College can be obtained from the Dean of the Faculty, Professor E. P. McLoughlin.

IRISH MEDICAL CORPORATIONS GRANTING DIPLOMAS.

Royal College of Physicians of Ireland.

The College issues its Licences in Medicine and in Midwifery to practitioners whose names appear on the Medical Registrar of the United Kingdom.

The Licence in Medicine.—The subjects of examination are : Practice of Medicine, Clinical Medicine, Pathology, Medical Jurisprudence,, Midwifery, Hygiene and Therapeutics.

The Licence in Midwifery.—Candidates must produce certificates of registration. A registered medical practitioner of five years' standing may be exempted from the examination by printed questions.

The Membership.—Examinations for Membership are held in February, June, and November. The fee for the examination is £21 to Licentiates of the College, or £36 15s. to non-Licentiates. Further particulars can be obtained from the Registrar of the Royal College of Physicians of Ireland, Kildare Street, Dublin.

The Fellowship.—Fellows are elected by ballot. Applicants must have been a Member of the College for at least one year and must have attained the age of 27 years. There is a fee of £35 in addition to a stamp duty of £25.

Royal College of Surgeons in Ireland.

The Licence in Surgery.—A candidate whose name is entered either on the Medical Registrar for the United Kingdom, the Colonial Medical Register, or the Foreign Medical Register of the year in which he presents himself for examination, and who satisfies the Council that he has passed through a course of study and Examinations equivalent to those required by the Regulations of the Conjoint Board of the Royal College of Physicians of Ireland and the Royal College of Surgeons in Ireland, preceded by the passing of an Examination in Arts recog-

nised by the General Medical Council, may, at the discretion of the Council, be admitted to the Examination.

Candidates are examined in Surgery, Clinical Surgery, Operative Surgery on the subject, Surgical Appliances, and Ophthalmic Surgery.

Diploma in Midwifery.—A diploma in Midwifery is granted after examination to persons possessing a registrable qualification.

Fellowship Examinations.—Candidates for the Fellowship shall make application to the President and Council to be admitted to examination. They are required to pass two examinations—Primary and Final. Candidates may present themselves for the Final Examination immediately after passing the Primary part, provided they have complied with the necessary regulations. The subjects for the Primary Examination are (*a*) Anatomy, including Dissections; and (*b*) Physiology and Histology. The subjects for the Final Examination are Surgery, including Surgical Anatomy and Pathology. For admission to the Final Examination the candidates must have passed the Primary Examination, and must be a Licentiate or Graduate in Surgery of a university or licensing body recognised by the General Medical Council; all such candidates must not be less than 25 years of age.

Further particulars as to fees and conditions of examination can be obtained from the Registrar of the College, Stephen's Green, West, Dublin.

Royal College of Physicians of Ireland and Royal College of Surgeons in Ireland.

Every candidate for the Conjoint Examinations of the Colleges shall produce evidence of having before entering on medical studies passed a Preliminary Examination in general education recognised by the Royal Colleges. Each candidate before receiving his diplomas must produce a registrar's certificate or other satisfactory evidence that he has attained the age of 21 years.

Preliminary Examination.—The subjects for examina-

tion are identical with those prescribed for the Preliminary Examination by the General Council of Medical Education and Registration.

Professional Examinations.—Every candidate must pass four Professional Examinations at the end of the first, second, third, and fifth years respectively of his professional studies. No candidate shall be admitted to the Final or Qualifying Examination within three months of his rejection at the Final or Qualifying Examination by any other licensing body.

First Professional Examination.—Every candidate is required, before admission to the First Professional Examination, to produce evidence—(1) of having passed in the subjects of the Preliminary Examination; and (2) of having attended a course of—(*a*) lectures on Theoretical Chemistry, six months; (*b*) Practical Chemistry, three months; (*c*) Biology, three months; and (*d*) Physics.

The subjects of the First Professional Examination are the following :—1. (*a*) Chemistry; (*b*) Physics. 2. Biology. The fee for this examination is £15 15s.

Second Professional Examination.—Candidates are not admissible to this examination till they have passed in the subjects of the First Professional Examination, and they must produce evidence of having attended (*a*) anatomical dissections, six months; and Lectures on (*b*) Anatomy, six months; (*c*) Physiology, six months; (*d*) Practical Physiology and Histology, three months.

The subjects of the Second Professional Examination are the following :—(1) Anatomy, and (2) Physiology and Histology. The fee for this examination is £10 10s.

Third Professional Examination.—Every candidate is required, before admission to the Third Professional Examination, to produce evidence of having passed the Second Professional Examination, and certificates of having attended courses of instruction in (*a*) the practice of a medico-chirurgical hospital for nine months; (*b*) Pathology—(1) Systematic, (2) Practical, three months each; (*c*) Materia Medica, Pharmacy, and Therapeutics, three months; (*d*) Forensic Medicine and Public Health,

three months. The subjects for the Third Professional Examination are the following:—(1) Pathology; (2) Materia Medica, Pharmacy, and Therapeutics; (3) Public Health and Forensic Medicine. The fee for this examination is £9 9s. Clinical instruction in Ophthalmic and Aural Surgery, three months. The examination in Ophthalmic and Aural Surgery may be taken immediately after passing the Third Professional Examination.

Final Professional Examination.—Before admission to the Final Examination candidates must have passed the Third Professional Examination and produced evidence of having attended in Division I. the practice of a medico-chirurgical hospital for two periods of nine months each (unless such evidence has been previously produced for admission in Division II.); the practice of a recognised fever hospital or the fever wards of a recognised clinical hospital, three months; clinical instruction in Mental Diseases, one month (12 attendances); lectures on Medicine, six months at a recognised medical school; of having performed the duties of medical clinical clerk in a recognised hospital for three months; of having attended a course of instruction in *post-mortem* examinations and demonstrations during one session. In Division II. of having attended the practice of a medico-chirurgical hospital for two periods of nine months each (unless such evidence has been previously produced for admission to Division I.); lectures in Surgery, six months as a recognised medical school; instruction in Operative Surgery, three months at a recognised medical school; of having performed the duties of surgical dresser in a recognised hospital for three months; of having attended a course of instruction in the practical administration of general anæsthetics. In Division III. of having attended a midwifery hospital or maternity and having been present at 20 labours, six months; instruction on vaccination, six attendances to be certified by a public vaccinator; lectures on midwifery (including diseases peculiar to women and to new-born children), six months at a recognised medical school. Candidates are recommended to present them-

selves in all the subjects of the Final Examination at one time, but a candidate at or after the end of the fourth year may present himself in any one of the Divisions I., II., or III., provided he has completed his curriculum as far as concerns the division in which he presents himself. The examination in at least one of the divisions must be deferred till the end of the fifth year.

The subjects of the Final Examination are: (1) Medicine, including Fevers, Mental Diseases, and Diseases of Children; (2) Surgery, Operative; and (3) Midwifery and Gynæcology, Vaccination, and Diseases of New-born Children. The fee is £6 6s. Further particulars can be obtained from Alfred Miller, O.B.E., the Secretary of the Committee of Management, Royal College of Surgeons, Stephen's Green, Dublin.

Royal College of Surgeons in Ireland (Schools of Surgery).

The schools of surgery are attached by Charter to the Royal College of Surgeons and have existed as a department of the College for over a century. They are carried on within the College buildings and are specially subject to the supervision and control of the Council, who are empowered to appoint and remove the professors and to regulate the methods of teaching pursued. The buildings have been reconstructed, the capacity of the dissecting room nearly trebled, and special pathological, bacteriological, public health, and pharmaceutical laboratories fitted with the most approved appliances in order that students may have the advantage of the most modern methods of instruction. The entire building is heated by hot-water pipes and lighted throughout by the electric light. Winter Session commences in October; Summer Session in April. Scholarships and Prizes: Carmichael Scholarship, £15; Mayne Scholarship, £8; Stoney Memorial gold medal; Operative Surgery, gold and silver medals; Barker Prize, £26 5s.; H. Macnaughton-Jones gold medal in Obstetrics and Gynæcology; and class prizes

and medals. Prospectuses and guide for medical students can be obtained post free on written application to the Registrar, Royal College of Surgeons, Stephen's Green, W., Dublin.

Apothecaries' Hall of Ireland.

The Licence of this Hall is granted to students who present certificates of having fully completed the course of study as laid down in the curriculum and who pass the necessary examinations. The diploma of the Apothecaries' Hall of Ireland entitles the holder to be registered as a practitioner in medicine, surgery, and midwifery, with also the privileges of the Apothecary's Licence. There are three professional examinations, the total fees for which amount to 30 guineas. Women are eligible for the diploma.

There are four examinations—primary, intermediate, Parts I. and II., and final. They are held three times a year, in March, June, and December. The primary examination comprises biology, physics, theoretical and practical chemistry (with an examination at the bench). Candidates holding a Pharmaceutical licence are exempt from this subject. Intermediate, Part I., Anatomy and Physiology. Intermediate, Part II., Pathology, Medical Jurisprudence, and Materia Medica and Pharmacy. The intermediate examination comprises anatomy of the whole body (including practical dissections), physiology, practical histology, and materia medica. The final examination comprises medicine, surgery, and midwifery.

Each candidate before receiving his diploma must produce evidence that he has attained the age of 21 years. The details of the course of education required and syllabus of the examinations will be supplied on application to the Registrar, at 40 Mary Street, Dublin.

ABSTRACTS OF CURRENT LITERATURE.

MEDICINE.

NOBECOURT AND PARAF: *Clinical and Therapeutic Study of the Pneumococcal Infection in Young Rabbits.* "Presse Médicale." August 28, 1920. P. 593

THE cases investigated occurred in babies aged from a few weeks up to four or five months. In each case the pneumococcus was isolated and its type determined. Type II. was found to be much the most common. The pneumococcus first appears in the nasopharynx, and gives rise to coryza, cough, and frequently nasal obstruction. Otitis media may occur, but it is not serious, and does not give rise to meningeal complications. The infection may spread to the lung and give rise to an extensive bronchopneumonia. This is a serious condition, the mortality being 40 per cent. In young babies true lobar pneumonia is practically unknown. In a certain number of cases (about 1 in 7) bronchopneumonia is complicated by empyema.

Prophylaxis is important. Babies should especially be kept away from adults affected with respiratory diseases. In treatment antipneumococcic serum is beneficial, but the authors hesitate to give a very definite pronouncement on its utility. They inject 5 to 10 c.c. of the serum direct into the lung. In cases of empyema the pus is removed by aspiration and serum injected in its place. This form of treatment gives a much better prognosis than surgical intervention.

V. M. S.

ELLIOTT, J. H.: *Dilatation of the Bronchi.* "Med. Rec." August 14, 1920.

THOUGH mentioned by Störck in 1761, this condition was first described by Lænnec in 1819. Elliott finds the disease much more common than is generally supposed, and in this paper he reviews a series of forty cases observed during one year. It has to be

differentiated chiefly from bronchitis and tubercle. Bronchitis was a precursor in half the cases: the remainder were preceded by pleurisy, pneumonia, influenza, or "gassing." Hæmoptysis occurred in 12, and the sputum in the great majority was neither offensive nor abundant. Physical signs are anomalous, but generally confined to the lower lobes. Stereoscopic *x*-ray examination is an invaluable aid in diagnosis.

G. E. N.

PETZETAKIS, M.D.: *Parabronchitic Pleurisies.* "Lyon Médical." August 25, 1920. P. 696.

THE author describes the frequent occurrence of pleurisy with effusion in the course of mild cases of acute bronchitis, and suggests the name "parabronchitic pleurisies." Fluid was found in the pleural cavity in 38 out of 51 cases of acute bronchitis studied—*i.e.*, 75 per cent. of cases. In some cases it is necessary to introduce the needle at many different places before finding the fluid. This is not surprising, for in many cases the author states that the quantity of fluid withdrawn was only 1 or 2 c.c. In all cases the fluid was sterile, and inoculation into guinea pigs produced no ill effects. The author studied the cytology of the effusions with great care, but his results differed very much in his various cases. None of the fluids gave a cell picture resembling that of tuberculous pleurisy, for which it is stated that "parabronchitic effusions" are likely to be mistaken.

V. M. S.

MAJOR, R. H.: *The Experimental Production of Pneumonia with the Influenza Bacillus of Pfeiffer.* "Journal of Medical Research." Vol. XLI. No. 3. March, 1920.

THE author found that cultures of *B. Influenzæ* (Pfeiffer) introduced into rabbits and cats, intravenously or intratracheally, either produced no effect, apart from that due to the toxin present in the cultures, or, at most, a few patches of broncho-pneumonia near the hilus of the lung in a few of the animals used. These experiments proved that the invasive powers of Pfeiffer's bacillus alone are limited.

If, however, the respiratory tract was irritated for a short time by chlorine gas, influenza bacilli subsequently injected intravenously or intratracheally invaded the lung extensively. Many of the animals died within forty-eight hours, and in all, the patho-

logical changes found at *post-mortem* examination were very marked. Pneumonia, resembling that found in fatal cases of human influenza, was universally present. In the majority of cases Pfeiffer's bacilli were grown from the lung, generally in pure culture.

J. W. B.

Allen, Mitchell, and Sherrill: *The Treatment of Combined Diabetes and Nephritis.* "Jour. Amer. Med. Assoc." 1920. 75. 444.

The paper discusses the possible etiological relationships between diabetes, arterio-sclerosis and nephritis. Diabetes is a disturbance of nutritive function, affecting all cells of the body so that their power of resistance and repair is subnormal, and they are more susceptible to injuries. Diabetes may thus predispose to renal and vascular disorders by increasing susceptibility to accidental injuries. The evidence for and against this is chiefly statistical: in 100 unselected diabetic cases the blood urea was below 30 mg. per 100 c.c. in 67; between 30 and 40 mg. in 17; between 40 and 50 in 10; and above 50 in 6 (figures obtained at admission on undetermined diets). The index of urea excretion was found below 80 in 14 cases (four of these were clinically nephritics and two had hypertension). In addition, there were 12 cases of hypertension with albuminuria and 17 cases of sclerosed peripheral vessels without albuminuria or hypertension. The impression was gained that a larger proportion of diabetics show noticeably high plasma chloride concentrations and chloride thresholds (which, perhaps, have some relation to the œdema of some cases and the hypertension of others). On the whole, it is doubtful whether diabetics show a higher proportion of clinical nephritis or impairment of nitrogen excretion than other hospital cases at corresponding ages; but some special tendency to chloride retention, vascular hypertension, and arterio-sclerosis may be suspected. From a study of 22 supposedly non-diabetic cases of renal and vascular disease, the authors conclude that hypertension in itself does not produce hyperglycæmia. The proportion of pancreatic changes found at necropsies in cases of hypertension and arterio-sclerosis fully accords with this conclusion.

The treatment of combined diabetes and nephritis is conducted according to the usual principles for the two diseases, and this is rendered all the easier by the adoption of modern methods. It is readily possible to adjust the protein ration to both diseases. If meats are forbidden in the treatment of hypertension the diet of a diabetic with hypertension is seriously limited, but with restrictions of salt intake such a patient is able to choose his protein at will, and because of the salt restrictions the hypertension

is often markedly reduced. Three cases are cited in detail to illustrate these principles. In each the blood and urine analyses comprise estimations of sugar, sodium chloride, urea and total nitrogen (urine). In addition, the fall in blood pressure as a result of the restriction of chloride intake is well shown.

The authors conclude that the majority of cases of combined diabetes and nephritis offer much hope when treated with the necessary thoroughness, and that by the employment of adequate measures from the earliest stages many of the distressing later consequences can be avoided.

HENRY F. MOORE.

EINHORN, M., and MEYER, W.: *Diagnosis and Treatment of Recurrent Cholecystitis without Stones.* "Med Rec." August 7, 1920.

Two distinct types of this disease occur—the first characterised by distinct attacks of colic in upper abdomen, often with slight rise of temperature and moderate leucocytosis; the other is associated with some epigastric distress after meals, but no distinct attacks. In both the liver will be found somewhat enlarged, and there is tenderness in the right hypochondrium. The most characteristic feature is the abnormal character of the bile, obtained by duodenal tube, which is generally turbid, and contains pus and bacteria. Though mild cases may yield to medical measures, for the recurrent attacks Einhorn and Meyer urge cholecystectomy. They prefer removal to drainage, on account of the danger of chronic infection, possibly followed by chronic pancreatitis, or the formation of stones. The results are claimed to be uniformly good.

G. E. N.

BLISS, A. R.: *Proposed Vegetable Drug Deletions.* "Med. Rec." August 14, 1920.

PROFESSOR BLISS draws attention to the widely-recognised fact that the number of drugs and preparations described in the Pharmacopœia is far too large for intelligent, practical use, and that a considerable proportion of them are superfluous or worthless. He approves of the tendency to restrict the teaching of Materia Medica to a study of the really useful drugs, and mentions that a "Handbook of Useful Drugs," published by the A. M. A. has been adopted in the majority of the medical schools and by the State Medical Examining Boards. He also obtained the opinions of 387 practitioners in Atlanta as

regards which drugs might be dropped. Of the entire Pharmacopœia only 30 drugs escaped without an adverse vote, while in the case of 31 over 50 per cent. condemned them as worthless. The author states that there is not a single one of these 31 drugs that possesses any medicinal actions or virtues to justify its retention. He cites a considerable number of other drugs which he thinks might share the same fate.

G. E. N.

MacIntyre, J.: *A Method for Test Meals.* "Glasgow Med. Jour." August, 1920.

A CHEAP and simple evacuator is described, consisting of a wide-mouthed bottle with a rubber cork pierced by two glass tubes. Each tube is bent at right angles, as in a Wolff's bottle, and one is fitted to the external end of the stomach tube; the other is joined by rubber tubing to the afferent (soap and water) end of an enema syringe. The stomach contents are aspirated by manipulating the bulb of the syringe.

Tallerman, K. H.: *On the Rectal Absorption of Glucose.* "Quart. Journ. Med." July, 1920.

EIGHT experiments were undertaken to determine this disputed point, and the results are here detailed. Sixty grammes of glucose were injected per rectum in 180 c.c. of normal saline. The blood-sugar was estimated half-hourly for three hours. Absorption was shown to take place, the average rise being 0.03 per cent. in one hour twenty minutes. It is thus slower and less complete than by mouth, in which case Maclean finds a rise of 0.05 to 0.06 per cent. in thirty minutes.

G. E. N.

Davison, W. C.: *Bacillary Dysentery in Children.* "Johns Hopkins Hospital Bulletin." Vol. XXXI. No. 353. July, 1920.

THIS paper gives an account of the bacteriology of clinical dysentery (with blood and mucus in the stools) in children between the ages of three months and eleven years.

Of 40 cases which were not in hospital satisfactory specimens were only obtained in 13. From these *B. Dysenteriæ* (Flexner) was isolated six times, *B. Dysenteriæ* (Shiga) once, and *B. Dysenteriæ* (Kruse E.) once. In two other cases the serum agglutinated Shiga's bacillus.

Of the 31 cases in hospital, Flexner's bacillus was isolated 18 times, and in 7 others agglutination pointed to a Flexner, and in one to a Shiga infection.

The stools of 63 children suffering from simple diarrhœa (summer diarrhœa, a term to which the author takes exception), and 100 healthy children were examined as a control, and in none were dysentery bacilli found.

The author's conclusion concerning agglutination in dysentery is that of great utility, but that it is essential to use a standardised method. Using Dreyer's standard agglutinable cultures, he found that a litre of 1/20 to 1/30 was suggestive and 1/50 diagnostic of previous or present dysentery infection He points out the pitfalls of agglutination in Flexner infections owing to the existence of at least five serological types of mannite fermenting bacilli, which correspond to Murray's types V, W, X, Y and Z, and include the so-called Harris, Hiss-Russell-Y and Strong groups.

J. W. B.

Marie, P. L.: *Progressive and Symmetrical Juvenile Degeneration of the Lenticular Nucleus accompanied by Hepatic Cirrhosis* (*Wilson's Disease*). "Presse Médicale." June 12, 1920. P. 384.

Marie reviews the literature dealing with progressive lenticular degeneration. This condition was first described by Gowers in 1888 under the name of tetanoid chorea, and was fully investigated by Kinnier Wilson in 1911. Since 1911 twenty-eight cases have been recorded. It is a disease of the extra-pyramidal motor system with an age incidence of from 10 to 28 years, which is familial, but is neither congenital nor hereditary. It is characterised by involuntary movements which are usually tremors, and which do not persist during sleep. Occasionally the movements may be athetoid, tetanoid, or clonic. Muscular rigidity is another cardinal sign. All striped muscles may be affected except those of the eye; the upper limbs are affected first; the face and neck follow. The fingers are adducted and are flexed at the metacarpophalangeal joints. The ankles are plantar flexed, but the increased irritability of the nerves to mechanical and electrical stimuli present in tetany is absent in Wilson's disease. The patient has often to be assisted in relaxing his spasmodic and painful grasp. This hypertonicity is always accompanied by asthenia, but there is no paralysis. Dysarthria and dysphagia are a further result of hypertonicity. There is a tendency to clip final syllables. Sensory disturbances apart from occasional cramp-like pains, are absent. Reflexes are not modified. Psychic changes are common in the later stages of the

disease: puerility is their chief characteristic; the patient laughs easily, foolishly, spasmodically; he never cries. Ocular signs are negative, and the cerebro-spinal fluid is not modified. Syphilis is said to play no part in the disease. The cirrhosis of the liver which always accompanies this lenticular lesion gives rise as a rule to no clinical sign. A transient icterus has occasionally been noticed, and Wilson and Howard each describe a case of hæmatemesis occurring a few days before death, but neither Wilson nor Howard were able to find anything pointing to hepatic insufficiency. Two forms of the disease are recognised, one acute or subacute lasting from a month to a year, accompanied by very rapid emaciation, and a raised, irregular temperature; the other chronic, lasting as long as seven years. Pathologically the disease consists in a bilateral degeneration of the lenticular nuclei affecting the putamen more than the globus pallidus. A glial overgrowth is followed by degeneration, and the nuclei tend to cavitation and appear worm-eaten. There are also secondary degenerations in the sub-thalamic region, the red nucleus, and in the strio-thalamic fibres and extra-pyramidal tracts. The diagnosis of progressive lenticular degeneration presents few difficulties. The rare Vogt-Oppenheim syndrome which is conditioned by an atrophy of the entire corpus striatum, resembles it clinically, but is congenital and hereditary, and in it the liver is not affected. Another syndrome described by Westphal and Strümpell under the name of pseudo-sclerosis presents even closer analogies. There is an overgrowth of neuroglia, but there is no degeneration as in Wilson's disease. The lesions, also, have a wider distribution. Oppenheim and others, however, believe that both these conditions are manifestations of the same disease. In several cases described as pseudo-sclerosis a cirrhosis of the liver has been recorded, accompanied, however, in some instances by a lowered tolerance of carbohydrates, which is said not to occur in Wilson's disease. Higier, however, has observed examples of both pseudo-sclerosis and Wilson's disease in the same family. Wilson believes that the hepatic cirrhosis precedes the lenticular degeneration, and that the condition is due to some non-microbic toxin which has a selective action upon the lenticular nucleus, in the same way that in one variety of grave congenital and familial icterus the bile-staining is very marked in the lenticular nucleus leaving the thalamus and caudate nuclei unaffected.

PARKINSON, J.; GOSSE, A. H.; and GUNSON, E. B.: *The Heart and its Rhythm in Acute Rheumatism.* "Quart. Journ. Med." July, 1920.

THESE observations are based on fifty consecutive cases of acute rheumatism. Little or no change was detected in the size of the heart, and the authors conclude that enlargement, when it does

occur, is slight. Disturbances of rhythm were very common. Sinus arrhythmia occurred in 94 per cent., and in some cases was associated with such a serious condition as heart block, thus indicating that the presence of sinus arrhythmia does not prove that the heart has escaped infection. Auricular premature contractions were present in 14 per cent., ventricular in only 6 per cent. Their association with block in one case and with flutter in another suggests that they may be an indication of myocardial invasion. They are not caused by salicylate of soda. Some degree of heart block developed in 30 per cent., generally in the shape of prolongation of a-c interval, but proceeding to dropped beats in four. It disappeared during convalescence, but the condition indicates myocardial damage, which may lead to serious chronic changes. Fibrillation was not seen, but flutter occurred in one case for a period of fourteen seconds, the whole paroxysm having been graphically recorded. Neither paroxysmal tachycardia nor nodal rhythm was detected—three cases in which the latter might be suspected being attributed to ventricular automatism. They regard the diagnosis of nodal rhythm as very uncertain without electro-cardiographic records. Pulsus alternans was present in one case complicated by pericarditis, but lasted only one day.

G. E. N.

Guillaume, A. C.: *The Clinical Significance of the Oculo-cardiac and Vago-sympathetic Reflexes.* "Presse Médicale." August 21, 1920. P. 574.

Dealing first with the so-called oculo-cardiac reflex, the author points out that the efferent effects may extend beyond the heart, and include vasomotor, respiratory, and pilomotor responses. Most often the response evoked by pressure on the eyeball is a slowing of the pulse-rate, which falls for a brief interval a few seconds after pressure has been applied, so that at the end of a minute the rate is lowered by about ten beats. Extra systoles may be produced, and Caillod and Cornil describe a ventricular dilatation.

This typical result may be exaggerated or it may be reversed, so that instead of bradycardia, there is tachycardia and quickened respiration. Gillaume reviews the evidence which shows that the reflex does not depend upon pressure of the eyeball alone, but that it can be evoked by any trigeminal stimulation; similar results may be produced by section of spinal roots or stimulation of peripheral nerves. He believes that, apart from disease of any segment of the reflex arcs involved, the nature of the response depends on the relative state of tone of the two great divisions of the autonomic system, the para-

sympathetic and the sympathetic, the effector response will take place through whichever division is stimulated: quickening the heart, for example, if the tone of the sympathetic is increased, and slowing it if the para-sympathetic (of which the vagus is the chief representative) offers a lower threshold to the entering stimulus.

The response may vary in the same subject with the activity of these divisions of the autonomic system. The author believes that the oculo-cardiac reflex affords a simple indication of sympathetico-tonia and of parasympathetico-tonia (vagotonia).

HATCHER, R. A.: *Some Observations on the Pharmacology of a Digitalis Body.*

EGGLESTON, CARY: *The Absorbtion of a Digitalis Body.* "Jour. Amer. Med. Assoc." 1920. No. 75. Pp. 460, 463

IN a previous paper, a method of separating the more readily absorbable principals of digitalis leaves from those less readily absorbable was described. The simplest way depends on the fact that chloroform takes up the more absorbable fraction from water. When the process is complete, the chloroform is evaporated spontaneously. This chloroform-soluble substance resembles digitalis to a certain degree, both chemically and pharmacologically, and it seems probable that it contains digitoxin, though not in its original combination. It is resinous in character, soluble in chloroform and in alcohol, and in a mixture of water and alcohol. It is much more readily absorbed than the chloroform-insoluble fraction when given to cats intravenously or through a stomach tube.

An effort was made to estimate the relative amounts of the two fractions in a tincture and in a fluid extract of digitalis. Both preparations yielded a very low chloroform-soluble percentage of the more absorbable fraction. This is a finding of great clinical importance.

It was found possible to use the chloroform-soluble substance for intravenous injection in animals and for intra-muscular injection in a man.

Eggleston compared the absorbtion of the chloroform-soluble and chloroform-insoluble digitalis bodies described by Hatcher with results previously obtained with various samples of tincture of digitalis made from high-grade leaves. Twenty-three courses of administration were carried out in 21 patients.

The results of this study show—(1) the fairly rapid and complete absorbtion of digitalis from the alimentary canal in the case of a number of high-grade tinctures; (2) the very poor absorbtion of certain tinctures, of which from four to nine times

the average therapeutic doses failed to produce therapeutic effects; (3) the marked uniformity of absorbtion of the chloroform-soluble extract of digitalis prepared from a variety of different leaves.

The chloroform-soluble extract is absorbed at least as rapidly as the best tincture, and its persistence of action is as good as that of digitalis of the best grade. The chloroform-insoluble extract is poorly absorbed from the alimentary canal. The chloroform-soluble extract has been administered intravenously to one patient with satisfactory results and without untoward effects.

ROYAL ACADEMY OF MEDICINE IN IRELAND.

President—Sir John Moore, M.D.Dubl., F.R.C.P.I.
Secretary—J. A. Scott, M.D., F.R.C.S.I.

SECTION OF SURGERY.

President—J. B. Story.
Secretary—A. K. Henry.

Friday, April 9, 1920.

Arthroplasty of the Knee-Joint.

Sir W. I. de C. Wheeler showed a case of arthroplasty of the knee-joint with radiograms taken before and after operation. Sir Robert Jones had not been impressed with Murphy's results, and the operation had been discarded. Mayo had reported four cases of arthroplasty of the knee, all of which were unsuccessful. The patient, a little girl, had osteo-myelitis six years ago, resulting in a double ankylosis, the left knee being flexed and the right extended. The right, operated on four weeks previously, was in plaster. The left arthroplasty was of four months' standing. Using lateral incisions he had re-modelled the femoral and tibial condyles, and had interposed lateral flaps of the soft tissues. The articulating surfaces should be as wide as possible to anticipate lateral instability.

The child then demonstrated the excellence of the result by flexing and extending the right knee through more than a right angle, and then by hopping across the room on the left foot, the left knee being unsupported by apparatus.

Mr. Pringle said that he had done a similar operation some years ago with the same after-treatment (metal-jointed side splints), but the result was not nearly so good. The man had a movable joint, but it was painful, and it was necessary to excise it six months later.

Loose Bodies after Gunshot Wound of the Knee-joint.

Mr. A. K. Henry showed a case of loose bodies after gunshot wound of the knee-joint. When he first saw the man, six months previously, there were lumps over the external condyle forming a mass the size of two hazel nuts, which had been diagnosed as exostoses. On examination, these were found to be movable, and an *x*-ray showed that the fragments corresponded to a defect in the external condyle. It was remarkable that these loose, bony fragments had remained uninfected. In six months they had diminished considerably in size, and had become more movable.

Sir W. I. de C. Wheeler said that bits of bone knocked off rarely persisted in a joint

Colonic Etherisation.

Dr. A. E. Boyd read a paper on "Oil Ether Colonic Anæsthesia." [See Dublin Journal of Medical Science, May 1920, page 121.] After an historical account of the method and a description of Gwathmey's technique, in which an ounce of 75 per cent. ether in olive oil is injected for every 20 lbs. body-weight of the adult patient, he described his own method of using a 50 per cent. solution of ether in oil He believed that control was greater, and the margin of safety wider with the weaker mixture, of which the effect could be supplemented with a little ether on an open mask The danger of colonic irritation was also lessened; only one of his cases had had any irritation at all. He described a number of difficult cases successfully anæsthetised by this method. One only had given cause for anxiety which could be attributed to the anæsthetic. The method was invaluable for operations on the head and neck, and especially when it was desirable to avoid the factor of psychic shock, since the patient was unaware of the nature of the colonic injection.

Mr. Pringle said that he was glad to hear this communication, as he considered that the Dublin anæsthetists were not keen enough on trying new things. He was sure that this was a most useful method, and that it would come into limited use. It was remarkable that there was no trouble with mucus as the ether was excreted by the lungs, though, of course, in most of Dr. Boyd's cases atropin was given.

Dr. Meldon asked whether this method was contraindicated in cases in which the cautery had to be used in the mouth, &c. Excretion by the lungs went on for hours after colonic etherisation.

Sir W. I. de C. Wheeler had to record a fatality under rectal anæsthesia. Three weeks ago he operated upon a pensioner, a robust man who had a hole in his head, the result of injury. The operation was to close the defect by means of a bone graft. The technique was that recommended by Gwathmey, except that a gr. v. capsule of chloretone was being inserted into the rectum. The bowel was washed out the night before and on the morning of the operation. Six ounces of ether and two ounces olive oil were given per rectum an hour before operation. Open ether was also given by the mouth. Anæsthesia was very light—the patient groaning slightly once or twice during the early stages of the operation. The bowel was carefully washed out at the end of the operation, which lasted one hour. An hour afterwards there was an accumulation of mucus in the man's throat. He was very cyanosed, but did not wake up sufficiently to get rid of the mucus himself. He died four hours after operation. This death he attributed to anæsthesia. He had only employed the method three or four times, and though, of course, this trouble might never occur again, he felt prejudiced against colonic etherisation.

Mr. McConnell said that this method in practice was quite simple. He had seen a good many of the cases to which Dr. Boyd referred. He was greatly struck by the lack of congestion about the face.

One case of malignant glands in the neck in an old, feeble patient was fatal after seventy-two hours—death being due to hypostatic pneumonia, which did not start at once, but twenty-four hours after operation. He had used the actual cautery in the mouth for up to twenty minutes at a time.

Dr. Boyd, in reply, said that secretion of mucus was increased, but not so much as with ordinary ether anæsthesia. The anæsthesia was in fact fairly dry, but this was probably due to the use of atropin. If 75 per cent. ether were used it might be inflammable. Though 65 per cent. solutions gave a deeper anæsthesia, he never used more than 50 per cent., which was much more easily controlled. The danger of the actual cautery should always be borne in mind. The only case he had had in which mucus gave trouble was the one mentioned by Mr. McConnell.

Early Symptoms of Cancer of the Colon.

Mr. Seton Pringle read a paper on the above. [See Dublin Journal of Medical Science, May, 1920, page 136.] He found that patients came, as a rule, too late for operation for good results to be secured, in spite of the fact that the growth remained localised for a long period. In 70 per cent. of those cases in his series not accompanied by obstruction, the diagnosis was made by discover-

ing a tumour; but in 80 per cent. of the cases, where no obstruction was present, the growth was in the pelvic colon, and was frequently not palpable. In 33 per cent. of his series, colostomy for obstruction had preceded resection, and 40 per cent. had recurrence within two years. These figures showed the need for revising the criteria of the disease. He believed that the presence of blood, mucus, and pus, with an increase in the number of daily evacuations, together with a sensation of dissatisfaction after defæcation, constituted a syndrome characteristic of early colonic stricture associated with ulceration. Since the commonest cause of these conditions was cancer, laparotomy was justified either in the presence of pus, &c., or by the symptom of dissatisfaction. He distrusted negative findings by *x*-ray or sigmoidoscope.

"Fæcal impaction" was, he believed, rare *per se*, ending usually in colostomy and the discovery of a malignant stricture.

Sir W. I. de C. Wheeler said that he took *x*-ray findings in these cases with a grain of salt. The bismuth might pass the growth in the colon more rapidly than usual. Exploratory laparotomy in these cases was a difficult thing to advise, and the advice was not usually well received. The sigmoidoscope might easily miss the growth, going either too high or not high enough to enable it to be seen.

Mr. Pearson thought the use of *x*-rays in these cases was very limited. Some six months ago he had a patient with cancer of the colon who was told by a careful radiologist that he had not cancer. Examination under anæsthetic was very useful before doing an exploratory laparotomy, the tumour being often easy to palpate. Of course, there was a form of cancer—*i.e.*, annular stricture—in which there was no tumour in the usual sense of the word.

Mr. Seton Pringle, in reply, said that he read his paper because many medical men did not seem to think of cancer in these cases, and chiefly because of one case he saw two weeks ago. His patient had been seen by a surgeon and physicians, and had been treated for nine months for mucous colitis. He diagnosed cancer of the colon, which at the operation she was found to have. He had given up the wide resections of many feet above and below the growth, which were recommended some years ago, as the cancer remained localised for a long time. Examination under anæsthesia was too seldom practised. Annular strictures were tumours, and could be palpated as such.

The Kondoléon Operation for Elephantiasis.

Mr. A. K. Henry read a paper on the above. He had operated by Kondoléon's method in 1918 on an advanced case affecting the

lower limb, and showed lantern slides of the condition before and after operation. He pointed out that Kondoléon's theory that the superficial lymphatics drained into the deep when the thickened fascia was removed, failed to explain the excellence of some of Kondoléon's results. He described experiments showing the physical distribution of injected fluids in the muscle strata, which would facilitate absorption by the blood vessels.

Sir W. I. de C. Wheeler said that Mr. Henry's result was very remarkable in a case of twenty-seven years' standing.

OBITUARY.

BYERS, JOHN WILLIAM. Died September 20, 1920. Born September 20, 1853, at Shanghai, China. Educated at the Royal Academical Institution and Queen's College, Belfast; B.A., 1874; M.A., 1875; M.Ch., M.D., 1878; M.A.O., 1897, R.U.I.; M.R.C.S. Eng., 1879; L.M.R.C.P.I., 1879; Professor of Midwifery and Diseases of Women and Children, Queen's University, Belfast; Consulting Physician, Royal Victoria Hospital, Belfast; Physician, Belfast Maternity Hospital; Member, Central Midwives' Board for Ireland; Knighted 1906. Died in Belfast.

CAMPBELL, ROBERT. Died September 6, 1920. Born at Templepatrick, Co. Antrim, August 1, 1866. Educated at the Royal Academical Institution and Queen's University, Belfast; B.A., 1887; M.B., B.Ch., B.A.O., 1892, R.U.I.; M.R.C.S. Eng., L.R.C.P. Lond., 1893; F.R.C.S. Eng., 1896; Surgeon to the Belfast Hospital for Sick Children and the Royal Victoria Hospital, Belfast; late Surgeon to the Ulster Volunteer Force Hospital.

COLLIER, ROBERT JAMES. Died September 22, 1920 Born 1860. Educated at Belfast and Edinburgh; L.R.C.P., L.R.C.S. Edin.; L.R.F.P.S. Glasgow, 1891; late Surgeon, P. & O. S. S. Co. Died at Bangor, Co. Down.

COSTELLO, MICHAEL JAMES BODKIN. Died September 30, 1920. Educated at Queen's College, Galway, and Catholic University, Dublin; M.B., B.Ch., B.A.O., 1891, R.U.I.; D.P.H., R.C.P. & S.I., 1902; Medical Superintendent Officer of Health, Glenamaddy Union; Dispensary Medical Officer, Dunmore; Fellow of the Royal Academy of Medicine in Ireland; J.P., Co. Mayo.

DENHAM, JOHN KNOX. Died September 8, 1920. Born in Dublin, February 22, 1858. Educated at Trinity College, Dublin; L.R.C.P.I., 1880; L., 1880; F.R.C.S.I., 1899; Medical Director, National Vaccine Institution, Dublin; late Surgeon, Incorporated Orthopædic Hospital of Ireland; and Consulting Surgeon, Home of Rest, Merrion.

GUINNESS, WYNDHAM MALAN GRATTAN. Died 1920. Educated at Trinity College, Dublin; B.A., 1895; B.A.O., B.Ch., M.B., and M.D., 1899; D.P.H., 1905, Dub.; Dip. Trop. Med., 1905, Cantab.; Capt., R.A.M.C. Died at Nairobi, British East Africa.

THE

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THE TRANSACTIONS OF THE ROYAL ACADEMY OF MEDICINE IN IRELAND

FOURTH SERIES. No. 9 NOVEMBER 1920

ORIGINAL COMMUNICATIONS.

NOTE ON A CASE OF UNUSUAL THORACIC INJURY.

By WILLIAM DOOLIN.

THE following case is submitted for record, as it seems to me to present features of both diagnostic and etiological interest :—

J. B., a frail, delicate-looking boy of 16 years, was admitted at mid-day on September 13th, 1920, to St. Vincent's Hospital, with the following history. Whilst cycling to school at 9.30 a.m. he stopped his bicycle by the footpath to watch a column of soldiers passing by. The military procession had caused a tramcar to stop, and from behind the tramcar a horse-drawn, fully loaded coal cart came out slowly on the wrong side of the road. The apex of the shaft of the car caught him on the right chest wall, and he fell to the ground. He was brought to a

hospital near by and strapped for broken ribs; he declined to stay in the hospital. Shortly after his return home, the pain in his chest increasing, he was brought to St. Vincent's Hospital by his mother. I did not see him for nearly two hours after admission. On my first examination his temperature was 98.4°, pulse 112, respirations 56; he was very pale and in marked respiratory distress, complaining of a "catch" beneath the right costal arch at the end of each jerky inspiration. There was no evidence of intra-abdominal hæmorrhage; no pain or tenderness in either flank. His general aspect was that of shock. Six hours later, temperature 99.6°, pulse 132, respiration 48. The face was covered with a fine sweat; respiratory embarrassment was more accentuated. His chief complaint was that of severe pain, chiefly centred beneath the right subcostal arch, radiating into the epigastric area. No pain was complained of on the left side at this stage. No hæmoptysis; no hæmatemesis; had not passed urine since entry, nor had he any desire to do so. Abdominal examination negative. Thoracic examination—The lower right costal area bulging slightly, and moving less on respiration than the other side; the percussion note over the right lower costal area was dull in front and at the side; dorsal percussion impracticable, owing to pain on movement. Skodaic resonance at and above right nipple line. Cardiac impulse distinctly palpable above and slightly to the inner side of the right nipple. On auscultation loud tubular breathing could be heard all over the dull area of the right lung. Examination of the left anterior and lateral thoracic area gave a normal percussion note; on auscultation normal vesicular breathing could be heard everywhere in front and at the side; an examination of the dorsum could not be carried out. No cardiac impulse was palpable to the left of the sternum; no cardiac sounds to be heard in the precordial area.

Dr. M. F. O'Hea examined the patient with me on this occasion and confirmed the clinical findings in every detail. Our provisional diagnosis at this stage was that of a right-sided hæmothorax, due to fracture of one of the

right ribs, yet we were utterly at a loss to account for the displacement of the heart, apparently to the side of injury. The condition of congenital situs invertus was considered.

14th September, 1920.—The night nurse's report ran: "Good night up to 12 a.m. Morphin, gr. $\frac{1}{6}$, had been administered at 11 p.m. From 2 a.m. on restless and in pain. Passed urine this morning, voluntarily, no hæmaturia."

9 a.m.—Temperature 99.4°, pulse 128, respiration 48. Complains now of severe pain in *left* lower costal area, and of a "catch" there on inspiration. No cough, no sputum, no hæmoptysis.

7 p.m.—Condition very much worse. During the day a definite bronchitis had set in, increasing respiratory distress immensely. Temperature 100.4°, pulse 160, respiration 54. The right lung area very much as last night, save for the addition of palpable subcutaneous emphysematous crackling. The left thoracic area was now quite dull on percussion laterally, from posterior scapular line outside to a line about $\frac{1}{2}$ inch external to the nipple line in front. Between this line and the sternum, anteriorly the percussion note was hyper-resonant, and air could be clearly heard entering and leaving the subjacent lung tissue. Each act of coughing now brought up a profuse frothy sputum, in which there was not the slightest trace of blood. Cardiac displacement still markedly in the neighbourhood of the right nipple.

The clinical condition was now demonstrating a marked change from that of the evening before: the main distress was now left-sided, and the findings pointed to a pneumo-hæmothorax of that side, which, be it remembered, was the side opposite to that on which the injury had been received. Dr. J. N. Meenan saw the patient with me in consultation on this occasion, and continued to see him until his demise.

15th September, 1920.—General condition showed a slight improvement throughout the day: the active bronchitic element was markedly reduced in response to

medication; the superficial emphysematous crepitation had quite disappeared. Right lung area now clear on percussion, save for area of cardiac dulness around right nipple. Base and sides of left lung of increasing dulness; tympany of anterior chest wall less; no vomiting; no hæmoptysis; bowels have not acted since admission, but abdomen easy and not distended. Temperature 100.8°, pulse 144. respiration 52.

16*th September*, 1920.—Patient died 5 a.m., 66 hours after injury. A *post-mortem* examination of the thoracic cavity disclosed an extensive hæmothorax of the left pleural cavity; nearly 1,500 c.c. of fluid blood were present, displacing the heart up into the right chest. There was a wide laceration of the lateral aspect of the lower lobe of the left lung, plugged with bloodclot. The entire base of the left lung was densely adherent to the upper diaphragmatic surface, evidently a condition of long standing. No apical lesion or adhesion were present. The right pleural sac was intact; the base of the lower lobe of the right lung was congested; there was an incomplete (greenstick) fracture of the seventh right rib, with slight extrapleural ecchymosis.

The abdominal contents were normal; by special request the cranial cavity was not examined.

The chief points of interest in this case seem to me to be as follows :—

(1) The absence of all symptoms of a left-sided intrathoracic injury during the first twelve hours of his illness. As a physical examination of the dorsum could not be carried out satisfactorily our diagnostic evidence at this stage was obviously incomplete.

(2) The production of a serious intrathoracic lesion on the opposite side to the point of application of violence. A relatively trivial rib fracture was produced by direct violence on the side of injury; the main contributory factor in the production of the lung tear must have been the fixation of the lung to the diaphragm, whereby a protective "glissade" of the lung was inhibited. How

far a possible sudden contraction of the attached diaphragm may have been contributory is a matter for speculation.

(3) The complete absence of any haemoptysis during the course of the patient's illness is surprising, considering the extensive solution of lung tissue and the bronchitic attacks which supervened. The sudden appearance and disappearance of subcutaneous emphysematous crackling over the uninjured lung I am quite at a loss to account for.

A CASE OF SUBCLAVIAN ANEURYSM TREATED BY DISTAL LIGATION.

By WILLIAM PEARSON, F.R.C.S.I.

THE treatment of aneurysm of the subclavian artery is beset with surgical difficulties, and the results are by no means always satisfactory. Text books in general condemn the operation of distal ligation of the artery, one of the latest works stating definitely that "distal ligature alone is unsuccessful." Consequently the following case, in which this procedure resulted in cure, is worthy of record :—

The patient, E. J. C., aged 44 years, a man of fine physique, came under my care on March 31st, 1916, with a diagnosis of subclavian aneurysm. He had formerly served for nine years in the army, from which he had taken his discharge in 1902. In August, 1914, he re-enlisted, and shortly afterwards went to France on active service. In the interval he had been a lift porter. In June, 1915, he first complained of pain in the right shoulder and was treated for rheumatism. Later he noticed that "the ends of his fingers and nails became swollen" and the pain became gradually worse. When I saw him the pain was extremely severe, neuralgic in type, shooting right down the arm into the hand and fingers. It was usually worse at nights and required relief

with large doses of morphia. In 1896 he had contracted syphilis, for which he had received treatment.

On examination the right hand, forearm and arm were somewhat thicker than the left, but there was no œdema; the ends of the fingers were very clubbed and the nails were extremely convex and spoon-shaped. There was mapping of the subcutaneous veins in the right arm and pectoral region. There were diminished tactile sensibility and general paresis of the right upper limb. He was unable to write distinctly or to carry out any fine co-ordinated movements with his hand.

A large rounded tumour occupied the lower part of the posterior triangle of the neck, extending inwards a short distance under the sterno-mastoid muscle. The tumour exhibited well-marked expansile pulsations, but there was no thrill. A loud, blowing, systolic murmur was audible over it, being conducted downwards along the axillary vessels and audible over the inner part of the clavicle and sterno-clavicular joint. The radial pulse was slightly delayed, but equal in volume to that on the left side, and the artery felt larger and thicker. An interesting fact was that the patient had always been naturally left-handed. A few days' treatment by rest and drugs considerably relieved the pain, and after full consideration I determined to deal with the case by proximal ligation of the subclavian artery as close to the aneurysm as possible, my intention being to ligature the vessel in the second stage or at the junction of its first and second parts.

Operation, April 10th, 1916.—The first stage of the artery was exposed through an L-shaped incision extending from the sterno-clavicular joint upwards along the anterior border of the sterno-mastoid muscle and outwards above the inner end of the clavicle, the muscle being divided a short distance above its origin. The vessel was first defined at the inner border of the scalenus anticus muscle below the origin of the vertebral, thyroid axis and internal mammary branches, but here it was diffusely dilated, its walls being sclerotic and firmly adherent both to its sheath and to the cervical pleura, and quite unsuited

to ligature. Further complete dissection of the first stage of the vessel back to its origin from the innominate showed that the same conditions were present throughout, so that isolation and ligature proved impracticable, and the attempt was abandoned.

During the following month the aneurysm increased in size in spite of rigid medical treatment, and as the patient's condition was becoming critical I decided to seek relief for him by distal ligation of the vessel.

Operation, May 15th.—The first stage of the axillary artery was exposed through an incision between the deltoid and pectoralis major muscles, no fibres being divided. The artery was secured as high up as possible behind the subclavius muscle by two silk ligatures placed $\frac{1}{3}$-inch apart; the upper ligature only occluded the lumen of the vessel, the lower was tied as tightly as possible. The vessel wall appeared healthy in this area, though in such close proximity to the aneurysm. The operation proved exceedingly easy and bloodless.

The circulation in the limb remained quite satisfactory, and twenty-four hours later there was no pulsation nor murmur in the aneurysm. The further progress of the case was equally good. Thus, on May 22nd—pain much less but still troublesome at times; circulation very satisfactory; radial pulse just perceptible at wrist; no pulsation or murmur in the aneurysm, which showed slight diminution in size. June 20th:—Tumour very much smaller and quite firm; radial pulse quite distinct but small; complete freedom from pain; fingers rather stiff, probably from disuse, as the arm had been kept immobilised since operation; patient allowed up for the first time.

Sixteen weeks after operation there was no swelling or pulsation in the subclavian region, the circulation in the limb was good, and the radial pulse was only slightly smaller than on the left side. There was no pain, but the patient complained of slight "feelings of numbness" at the wrist, and his grip was still weak. Soon afterwards he was discharged from the service and passed from my

observation, but subsequent reports indicate that the cure was permanent.

The gratifying result obtained in this case was somewhat surprising, remembering the unfavourable views of this operation expressed by other writers. The prompt cessation of pulsation in the aneurysm and the rapid and complete disappearance of the tumour were quite remarkable. Proximal ligation is by no means simple, while intrasaccular procedure in the case of the subclavian vessel will always prove difficult and hazardous, much more so when dealing with spontaneous than with traumatic aneurysms. Ligation of the first stage of the axillary artery is an easy, not to say minor, operation, and would appear to be well worth trial as a first expedient in a case where the patient's general condition or other factors rendered serious or prolonged operation undesirable.

A CASE OF POSTURAL HOARSENESS.

By J. STAFFORD JOHNSON.

G. D., G.S.W., France (8.4.1917).—This man received a shrapnel wound in the upper part of his back, one fragment of shell penetrating upwards into the neck and lodging at the left side in the lower third. A few weeks after his wound the piece of metal was removed from the neck by an incision just behind the left sterno-mastoid muscle in its lower third. Within a month of this operation he noticed his voice going husky, and this being most marked when he turned his head to the left side. In other positions he found his voice did not change appreciably. His condition has been unchanging since then.

Clinically the patient presented marked huskiness when his head and neck were strongly rotated to the left; in other positions the huskiness was much less. Nothing abnormal was found in the mouth or pharynx. Examination by laryngeal mirror, with head centrally placed,

showed a slight degree of laryngitis, probably due to excessive cigarettes. The man had been a heavy smoker for years. The vocal cords moved well and apparently to their full extent.

When the head was well rotated to the left a condition of partial adductor paralysis of the left vocal cord appeared.

Unilateral adductor paralysis is very rare and generally due to local causes. A consideration of the facts of the case and of the anatomy of the left recurrent laryngeal nerve suggests that the cause in this instance was a drag on the nerve by scar tissue.

Unfortunately there is no evidence available to show the exact position of the shrapnel fragment when removed; what difficulty there was experienced in locating it; or what degree of scar tissue was likely to result from the search. In the absence of these operative findings the presumption is that scar tissue formed on the superficial aspect of the nerve, either as the result of the close proximity of the metal to the nerve trunk itself, or, as seems more likely from the history, as a sequel of the dissection necessary in locating the foreign body.

The more exposed position of the left nerve and the collection of its adductor fibres in the outer side of the nerve trunk make this the most likely cause of the man's condition. Traction on this scar tissue was brought about by rotation of the neck structures and consequent stretching of the tissues overlying the nerve.

Eastman of Indianapolis, in a paper on "Local Anaesthesia in Thyroid Operations," points out that pinching of the recurrent nerve during operation at once caused hoarseness, which was relieved as soon as pressure with the forceps was released. As the patient was in no way incapacitated from his work no operative interference was carried out.

REPORT OF THE ROTUNDA HOSPITAL, 1917-1918.

During the year ending October 31st, 1918, 1,458 patients were delivered under the care of the hospital in its Extern Department, and 2,123 patients were admitted to the Maternity Wards. Of the latter number 262, who were not in labour, were discharged undelivered, and 1,812 were delivered. Thus a total of 3,270 labours in all were attended by the Hospital Staff, being an increase of 180 on the previous year. Eleven deaths occurred in the Extern Department and eleven in the Intern, being a percentage mortality of .75 in the former and of .60 in the latter, or a mean percentage mortality of .61. Three deaths in the Extern Maternity occurred from pneumonia during the influenza epidemics. One death resulted from external accidental hæmorrhage and one from *post-partum* hæmorrhage; in the latter case the patient was moribund on the arrival of the clinical clerk. Another death occurred from complete inversion of the uterus; uterus replaced, but death followed shortly after.

The death from uræmia occurred in an xviii para. six months pregnant, with a history of hæmoptysis and vomiting, and four convulsions in the two hours previous to arrival of students. She was comatose, with stertorous breathing on arrival of the clinical clerk, and received the routine treatment. One and three-quarter hours later she had another convulsion during which the heart stopped, restorative methods being of no avail.

The morbidity rate of the hospital, as estimated by the standard of the British Medical Association, was 1 in 17.66, or 5.84 per cent., being a somewhat higher rate than the previous year, when it was 1 in 17.5, or 5.7 per cent.

It will be noted that there is a great increase in the number of cases morbid due to extra genital causes, chiefly influenza. Should these cases of influenza be subtracted the morbidity rate falls to 1 in 22.0, or 4.52 per cent.

There were ten cases of unavoidable haemorrhage. One mother died of peritonitis following Cæsarean section, performed on account of her age; five of the children were stillborn. There were eight cases of accidental haemorrhage, four of which were external, one combined, and three concealed. Two of these cases were treated by plugging of the vagina, two by Cæsarean section and others by rupture of the membranes. There were three deaths from this condition.

There were fifteen cases of contracted pelvis. In five of these delivery was spontaneous; in one case the forceps was applied and delivery effected. In two cases Cæsarean section was performed, and in seven cases pubiotomy was performed, one of which cases required the assistance of the forceps, and one patient died of general miliary tuberculosis.

There were thirteen cases of presentation and prolapse of the cord; seven children were born alive.

There were six cases of eclampsia during the year. One mother died; it was found at *post-mortem* that degeneration was far advanced in kidneys and liver. Four children were born alive and three dead. The treatment of eclampsia is continued on the lines substituted by Dr. Tweedy.

The forceps was applied in 65 cases; two mothers died—one from accidental haemorrhage and the other from broncho-pneumonia. 56 children were delivered alive.

Cæsarean section was performed eight times, the indications being in two cases concealed accidental haemorrhage, in two cases obstruction by myomata, in two cases contracted pelvis, in one eclampsia and another placenta praevia. Three mothers died, one from toxaemia, one concealed accidental haemorrhage and the third from peritonitis.

EXTERN DEPARTMENT.

TABLE No. I.—*Nature and Number of Cases Treated.*—1917-1918.

Total deliveries	1458	Operations—	
Presentations—		Manual removal of placenta	27
Vertex	1269	Forceps	15
P.O.P.	3	Version	3
Face	5	Suture of perinæal lacerations	86
Brow	1		
Breech	34	Maternal mortality	11
Transverse	6		
Twins	19	Infantile mortality—	
Hydramnios	5	Recent	37
Abortions and miscarriages	130	Macerated	8
Hæmorrhages—		Fœtal abnormalities—	
Unavoidable	1	Anencephalus	4
Accidental	1	Spina bifida	1
Post-partum	12	Hydrocephalus	1

TABLE II.—*Mortality (Extern Maternity)*

Name	Age	Para	Date of Delivery	Date of Death	Cause of Death	Remarks
M. L.	36	III.	Undelivered	11.12.17	External accidental hæmorrhage; collapse	Patient markedly collapsed on arrival of Assistant. Failed to rally, and died in 20 mins. in spite of measures taken to restore her
M. F.	35	IV.	20.12.17	15.3.18	Phthisis	— —
M. D.	30	III.	25.4.18	25.4.18	Complete inversion of uterus; shock	Patient suffering from extreme shock on arrival of Assistant; never rallied, in spite of necessary measures taken
E. M.	35	V.	7.5.18	7.5.18	Post-partum hæmorrhage	Patient markedly collapsed on arrival; never rallied
M. L.	34	II.	12.7.18	12.7.18	Influenzal broncho-pneumonia	4½ months' miscarriage
E. M.	34	VI.	28.7.18	31.7.18	Mitral stenosis and regurgitation	— —
E. H.	42	XVIII.	Undelivered	15.9.18	Uræmia	Patient suffering from chronic nephritis for over 12 years; 6 months pregnant
M. M.	24	II.	18.10.18	30.10.18	Septic infection	
C. H.	42	VII.	22.10.18	27.10.18	Pneumonia (double lobar)	
K. H.	34	V.	25.10.18	25.10.18	Influenzal pneumonia	
M. M.	35	VI.	26.10.18	8.11.18	Septic infection	

INTERN DEPARTMENT.

TABLE NO. I.—*Total Admissions and Deliveries.*

1917-18	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Total
Total Deliveries ...	133	123	139	121	156	159	168	176	195	169	175	147	1861
Patients admitted not in Labour	17	13	24	25	19	22	28	23	25	16	22	28	262
Total Admissions ...	150	136	163	146	175	181	196	199	220	185	197	175	2,123

TABLE No. II.—*Nature and Number of Cases Treated.*

Total admissions	2,123
Total deliveries	1,812
Primiparæ	686
Multiparæ	1,126
Presentations—	
Vertex, normal rotation	1,735
,, face to pubes	6
Face	6
Brow	3
Breech	56
Transverse	6
Twins	22
Complications of pregnancy—	
Hydramnios	6
Abortions and miscarriages	49
Hæmorrhages—	
Unavoidable	10
Accidental, external	5
,, internal	3
Post-partum	24
Lacerations of genital tract—	
Perinæum	433
Cervix	3
Contracted pelvis	15
Placental abnormalities—	
Adherent	14
Prævia	10
Battledore	2
Abnormalities of cord—	
Prolapse	12
Presentation	1
Accidental complications—	
Myomata of uterus	3
Measles	2
Chorea	1
Cardiac disease	3
Influenza	25
Pneumonia	2
Hæmatoma of vulva	1
Tonsillitis	1
Mastitis	5
Eclampsia	6

Operations—	
Pelvimetry	14
Induction of labour and miscarriage	7
Episiotomy	4
Impacted shoulders	1
,, breech	1
Suture of perineal lacerations	433
Complete	11
Incomplete	422
Suture of cervical lacerations	2
Forceps	65
Version	18
Cæsarean section	8
Abdominal, conservative	7
,, radical	1
Pubiotomy	7
Manual removal of placenta	18
Craniotomy	1
Morbidity (B.M.A. Standard)—	
Average	1 in 17.66
Percentage	5.84
Fœtal abnormalities—	
Ascites	2
Anencephalus	4
Cleft palate	2
Patent foramen ovale	1
Congenital syphilis	1
Spina bifida	3
Talipes	1
Hydrocephalus	1
Xiphopagus	1
Infantile complications—	
Cephalhæmatoma	2
Cerebral hæmorrhage	1
Fractured humerus	2
Melæna	4
Ophthalmia	4
Hernia	1
Icterus neonatorum	1
Epistaxis	1
Pyloric stenosis	1
Pemphigus neonatorum	1
Meningitis	3

TABLE No. III.—*Pelvic Presentations.*

Para	Total	Dead Children		Remarks
Primiparæ	25	Recent	5	Six occurred in twin pregnancies Two associated with prolapse of cord
		Macerated	1	One associated with Xiphopagus
		Total	6	One associated with locked twins One impacted breech
Multiparæ	31	Recent	1	Seven occurred in twin pregnancies
		Macerated	7	One impacted breech
		Total	8	
Totals	56	Total	14	

TABLE No. IV.—*Twins.*

Both males	- - - -	7
Both females	- - - -	8
Male and female	- - - -	7
Total	- - -	22

TABLE No. V.—*Unavoidable Hæmorrhage.*

Name	Age	Period	Para	Variety	Result to Mother	Result to Child	Presentation	Treatment and Remarks
A. E.	30	8	XI.	Lateral	Alive	Dead	Vertex	Os 2 fingers; bi-polar version; natural delivery in 2 hours
E. B.	31	8	VI.	Marginal	,,	Alive	,,	Bi-polar version; natural delivery 1 hour later
E. L.	30	6	III.	,,	,,	Dead	,,	Os one finger; vagina plugged; plug removed in 6 hours; os same size; vagina replugged; plug removed in 4 hours, pains being very strong; os nearly full; membranes ruptured; natural delivery
E. N.	37	8	VIII.	Central	,,	,,	,,	Bi-polar version: natural delivery 9 hours later
A D.	32	6	VI.	,,	,,	,,	,,	Os one finger; vagina plugged; plugs removed 6 hours later; bi-polar version; natural delivery 2 hours later; adherent placenta removed manually
M. D.	31	8	X	Marginal	Alive	Dead	,,	Bi-polar version; natural delivery 6 hours later
E. B.	40	7	IX.	,,	,,	Alive	,,	Bi-polar version; natural delivery 3 hours later
E. M'C.	33	8	II.	Central	,,	,,	,,	Bi-polar version; natural delivery 2½ hours later
M. B.	39	8	I.	Marginal	Dead	,,	,,	Os one finger; vagina plugged; Cæsarean section owing to age. Patient died 6th day from peritonitis. *Post-mortem*—Profuse amount of pus in abdomen; uterus septic, and scar open for 2 inches. Patient in charge of a nurse for 24 hours before admission
J. M.	24	7	III.		Alive	,,	,,	Placenta born before baby

TABLE NO. VI.—*Accidental Hæmorrhage.*

Name	Age	Period	Para	Variety	Result to Mother	Result to Child	Presentation	Treatment and Remarks
A. M'D.	22	7	II.	External	Alive	Dead	Vertex	Sent in from city by Extern Assistant with vagina plugged; pulse 120; 4 hours later plug removed; os fully open; forceps applied
J. O'R.	23	6	I.	Concealed	,,	,,	,,	Six months pregnant; uterus tense; later half way to ensiform; pulse 99 and steady; natural delivery next day; placenta statim with large amount of blood clot
C. B.	33	8	VII.	,,	Dead	,,	,,	Patient admitted with history of pain in abdomen and increase of size; abdomen tender; size term; pulse 120-130. Cæsarean section performed; patient died 1½ hours later, uterus never having contracted properly
C. S.	26	7	II.	Combined	Alive	,,	,,	Vagina plugged; strong labour after 2 hours; large amount of blood clot after placenta
F. J.	23	8	IV.	External	Alive	Macerated	Vertex	Admitted with history of heavy bleeding; slight hæmorrhage on admission; next day strong pains; os full; membranes ruptured; macerated child born 25 minutes later

TABLE No. VI.—*Accidental Hæmorrhage.—continued.*

Name	Age	Period	Para	Variety	Result to Mother	Result to Child	Presentation	Treatment and Remarks
K. G.	23	7	V.	External	Dead	Dead	Vertex	Sent from country with history of severe hæmorrhage; patient in labour; membranes ruptured; pulse gradually became worse; os ¾ dilated; cervix divided. Forceps applied; patient died 2 hours later
M. J. M'D.	39	6	IX.	Concealed	Alive	,,	,,	Patient 6 months pregnant, with albuminuria; concealed accidental hæmorrhage. Cæsarean section performed; fair amount of free blood in peritoneal cavity; anterior wall of uterus blackened in colour owing to extravasated blood
E. S	32	7	X.	External	Died	Both alive	Breech IV. and Breech II.	Labour induced owing to *ante-partum* hæmorrhage; tents inserted 20 hours later, patient having good pains, tents removed; os ¼ dilated; three hours later patient had a severe rigor; os fully dilated; membranes ruptured with stylet; both children born; *post-partum* hæmorrhage; both placentas adherent and removed manually; patient died one hour later.

TABLE No. VII.—*Contracted Pelvis.*

Measurements made with Skutsch's Pelvimeter.

Name	Age	Para	Measurements		Presentation	Mode of Delivery	Result to Mother	Result to Child	Weight of Child	Remarks
			C.V.	T.						
L. B.	19	I.	8.83	11.	Vertex	Natural after Bumm's pubiotomy	Recovered	Alive	6½	Os fully dilated; membranes intact; head high up; delivery 2 hours after pubiotomy
C. C.	34	IV.	8.0	10.	,,	Natural in Walcher's position	,,	,,	7½	1st labour: forceps, dead child; 2nd labour: forceps, dead child; 3rd labour: Cæsarean section
A. H.	22	III.	9.8	14.5	,,	Forceps	,,	Dead	—	Cord prolapsed and pulseless on admission
L. S.	20	I.	8.33	9.	—	Cæsarean section	,,	Alive	6¼	*Vide* Table XI.
M. K.	25	I.	8.2	—	Posterior parietal	Natural after Bumm's pubiotomy	,,	,,	7⅓	Discharged walking well, 19th day
M. C.	39	III.	8.9	12.4	Vertex	Natural	,,	,,	8½	1st and 2nd labours, breech, which died after a few minutes
M. O'H.	22	II.	8.5	—	,,	Natural after Bumm's pubiotomy	,,	,,	7	Head unfixed after 36 hours in labour; os ¾ dilated; membranes ruptured; morbid; discharged walking well, 27th day
M. L.	24	I.	11.25	11.9	,,	Natural	,,	,,	7¼	Head unfixed at start of labour
N. K.	24	IV.	6.8	13.45	—	Cæsarean section	,,	,,	7	1st three labours craniotomy. Cæsarean section before labour began

TABLE NO. VII.—*Contracted Pelvis—continued.*

Name	Age	Para	Measurements		Presentation	Mode of Delivery	Result to Mother	Result to Child	Weight of Child	Remarks
			C.V.	T.						
L. D.	26	I.	8.0	12.3	Vertex	Bumm's pubiotomy	Recovery	Dead	7¼	Head unfixed; os ½ dilated; morph. gr. ¼. Next day cord prolapsed; internal version; cord pulseless. Left to nature. Discharged 18th day
M. C.	24	I.	9.0	11.5	„	Normal after Bumm's pubiotomy	Died	Alive	5¾	*Vide* Table XIII.
C. D.	29	I.	8.6	—	„	Normal after Bumm's pubiotomy	Recovered	„	6	Head high; os 1 finger; membranes ruptured. Discharged 14th day
C.M.	22	I.	9.8	—	„	Normal	„	„	7	Head unfixed; os 2 fingers; membranes intact
M. C.	17	I.	10.9	11.25	„	„	„	„	8½	——
M. O'T.	32	IX.	—	—	„	Bumm's pubiotomy; forceps	„	„	7¾	Previous pubiotomy 1910. Head unfixed; os fully dilated; signs of fœtal distress. Failed to deliver with forceps Pubiotomy and extraction with forceps

TABLE No. VIII.—*Prolapse and Presentation of Cord.*

Name	Age	Para	Weight of Child		Presentation	Treatment	Result to Mother	Result to Child	Remarks
			lbs.	ozs.					
M. G.	26	I.	5	9	Transverse	Combined external and internal version	Recovered	Dead	First of twins; cord pulseless
A. P.	36	VII.	8	5	,,	Internal version and extraction	,,	Alive	Os ¾ dilated and cord prolapsed; several attempts to replace cord failed after version, so second foot brought down and child extracted rapidly
M. D.	20	I.	5	6	Breech	—	,,	Dead	First of twins; cord pulseless
A. H.	32	III.	6	5	Vertex	—	,,	,,	Cord prolapsed, and pulseless on admission. Forceps applied
H. H.	32	VIII.	7	6	Transverse	Cephalic version	,,	Alive	Second of twins. After version cord found presenting; cord replaced; membranes ruptured and head fixed.
A. L.	28	III.	7	11	Vertex	—	,,	Dead	Cord pulseless when found prolapsed. Craniotomy for threatened rupture of uterus
D. B.	26	I	7	1	Breech	Extraction	,,	Alive	——
L. D.	26	I.	7	4	Vertex	Version	,,	Dead	*Vide* Table VII.
E. C.	27	II.	8	8	,,	Internal version and extraction	,	Alive	Os nearly fully dilated; cord pulsating feebly
J. D.	36	VI.	5	13	Shoulder	Internal version	,,	Dead	Cord prolapsed, and pulseless on admission
M. G.	29	I.	6	2	Vertex	Forceps	,,	Alive	Os fully dilated
M. K.	34	III.	6	1	Transverse	Combined version	,,	,,	Membranes ruptured 12 hours before admission; os two fingers; hand and cord in cervix
M. R.	22	II.	6	11	Breech	Fundal pressure	,,	,,	Cord prolapsed and pulsating

TABLE NO. IX.—*Eclampsia.*

Name	Age	Para	Admitted	Condition on Admission	Urine	No. of Fits			Treatment	Result to Mother	Result to Child	Remarks
						Before Labour	During Labour	After Labour				
A. H.	20	—	13.11.17	Conscious	—	—	1	—	Morphia; purgatives; soda bicarb. forceps	Recovered	Alive	——
M. C.	33	III.	21.1.18	Conscious; legs & feet swoollen	Loaded with albumen. Hyaline casts and R.B.C.	—	—	1	Morphia and purgatives	,,	Died	Premature (8 months), 4⅞ lbs.
M. F.	24	I.	25.3.18	Conscious	Loaded with albumen, pus and R.B.C.	—	2	—	Forceps delivery; morphia; urotropine	,,	Alive	Morbid; retention in retroverted uterus
M. D.	29	I.	19.5.18	Comatose	Albumen solid	13	—	—	Morphia; stomach and rectal lavage; poultices, submammary soda bicarb.; venesection; Cæsarean section	Died	Macerated	*Vide* Table XIII. and XI.
M. H.	30	I.	31 5.18	Conscious; labia, legs & feet very swollen	Loaded with albumen. R.B.C.	—	—	3	Morphia poultices to loins; soda bicarb. by mouth; purgatives	Recovered	1, Dead 2, Alive	1st fit 4th day; last fit 8th day. Twins; breech
H. C	25	II.	15.6.18	Conscious	Loaded with albumen	—	4	—	Morphia; purgatives; rectal lavage; poultices; forceps	,,	Alive	——

TABLE X.—*Application of Forceps.*

Indication	Number of Cases	Result to Mother		Result to Child		Remarks
		Recovered	Died	Alive	Dead	
Delay in second stage - -	53	53	—	49	4	
Delay in second stage. Persistent occipito-posterior	1	1	—	1	—	
Albuminuria - - -	2	2	—	1	1	
Eclampsia - - -	3	3	—	3	—	
Threatened rupture of uterus -	1	1	—	—	1	*Vide* Table VIII. Cord prolapsed and pulseless on admission
Heart disease - -	1	1	—	1	—	
Accidental hæmorrhage -	2	1	1	—	2	*Vide* Tables VI. and XIII.
Hæmatoma of vulva - -	1	1	—	1	—	
Broncho-pneumonia - -	1	—	1	—	1	*Vide* Table XIII.
Total -	65	63	2	56	9	

TABLE X A.—*Number of Pregnancy of Patients in whom the Forceps was applied.*

Para	Number of Forceps Cases
I. - - -	49
II. - - -	7
III. - - -	2
IV. - - -	3
V. and over - -	4
Total - -	65

TABLE X B.—*Age of Patients in whom the Forceps was applied.*

Age	Number of Forceps Cases
16–25 - - -	20
26–30 - - -	23
31–35 - - -	10
36 and over - -	12
Total - -	65

TABLE No. XI.—*Cæsarean Section.*

Name	Age	Para	Date	Nature of Operation	Indication	When performed	Result to Mother	Result to Child	Remarks
M. McD.	39	IX.	12.12.17	Conservative	Concealed accidental hæmorrhage	Before labour	Recovered	Dead	See Table VI.
K.C.	38	II.	6.3.18	Conservative and myomectomy	Obstruction by myoma	In labour	,,	Alive	On admission tumour size of orange in Douglas' pouch. When os ¼ dilated tumour in front of head. At operation several other myomata were removed
L. S.	20	I.	19.3.18	Conservative	Contracted pelvis	Before labour	,,	,,	*Vide* Table VII.
M. D.	29	I.	20.5.18	,,	Eclampsia	,,	Died	Macerated	*Vide* Tables XIII and IX.
B. C.	37	I.	16.5.18	Radical	Obstruction by myomata	Before labour	Alive	Alive	Large myoma in Douglas' pouch, other parts of uterine wall infiltrated with small myomata
C. B.	33	VII.	4.6.18	Conservative	Concealed accidental hæmorrhage	,,	Died	Dead	*Vide* Tables XIII. and VI.
M. B.	39	I.	14.6.18	,,	Placenta prævia marginalis	In labour	,,	Alive	*Vide* Tables XIII. and V.
N. K.	24	IV.	21.6.18	,,	Contracted pelvis	Before labour	Alive	,,	*Vide* Table VII.

TABLE XII.—*Morbidity, B. M. A. Standard.*

	Nov.	Dec.	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Total
Total deliveries	129	114	136	121	152	154	164	170	192	167	170	143	1812
Cases morbid -	3	3	5	6	8	3	9	11	10	9	17	22	106
Percentage -	2.32	2.63	3.67	4.95	5.26	1.94	5.48	6.49	5.20	5.38	10.0	15.38	5.84

Total number of morbid cases - 106
Total percentage morbidity - 5.84
Total average morbidity - 1 in 17.66

TABLE XII A.

Comparison of Morbidity in Primiparæ and Multiparæ.

PRIMIPARÆ.

	Nov.	Dec.	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Total
Total deliveries	52	37	59	48	47	53	63	60	76	64	72	55	686
Cases morbid -	3	0	4	2	2	0	5	7	7	5	7	8	50
Percentage -	5.76	0	6.77	4.16	4.25	0	7.93	11.66	9.21	7.81	9.72	14.54	7.28

Total percentage morbidity - 7.28
Total average morbidity - 1 in 13.72

MULTIPARÆ.

	Nov.	Dec.	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Total
Total deliveries	77	77	77	73	105	101	101	110	116	103	98	88	1126
Cases morbid -	0	3	1	4	6	3	4	4	3	4	10	14	56
Percentage -	0	3.89	1.29	5.47	5.71	2.97	3.96	3.63	2.58	3.88	10.20	15.90	4.97

Total percentage morbidity - 4.97
Total average morbidity - 1 in 20.1

Table No. XII. B.

Extra-genital Causes of Morbidity

General miliary tuberculosis	1
Cystitis	3
Influenza	24
Mastitis	5
Measles	2
Constipation	2
Tonsilitis	1
Bronchitis	1
Lobar pneumonia	1
Broncho-pneumonia	1
Total	41

Table No. XII C. – *Operative Cases showing Morbidity.*

Nature of Operation	Number of cases of each Operation	Number Morbid	Percentage Morbidity	Average Morbidity	Remarks
Application of forceps	65	8	12.30	1 in 8.1	Including 2 deaths
Manual removal of placenta	18	3	16.66	1 „ 6	—
Induction of labour	7	1	14.28	1 „ 7	—
Unavoidable hæmorrhage	10	3	30.0	1 „ 3.33	—
Accidental hæmorrhage, internal	4	2	50.0	1 „ 2	—
Post-partum hæmorrhage	26	1	3.84	1 „ 26	—
Pubiotomy	7	2	28.5	1 „ 3.5	—
Version	14	0	0	0	—
Suture of lacerated perinæum	433	20	4.5	1 „ 21.6	—
Cæsarean section	8	3	37.5	1 „ 2.66	—
Perforation	2	1	50	1 „ 2	—
Con. acc. hæmorrhage	3	1	33.3	1 „ 3	—

TABLE No. XII. D.—*Duration of Stay in Hospital of Morbid Cases.*

Under 10 days	- -	56 cases, including	10 deaths*
10–19 „	- -	36 „	
20–29 „	- -	11 „ „	1 death
Over 29 „	- -	3 „	
		106	

TABLE No. XII. E.—*Duration of Temperature.*

Under 5 days	- -	79 cases, including	7 deaths*
5–9 „	- -	19 „ „	2 „
10–19 „	- -	5 „	
Over 19 „	- -	3 „ „	2 „
		106	

TABLE No. XII. F.—*Highest Temperature Recorded.*

Under 100°	- -	9 cases, including	9 deaths*
100°–100.9°	-	22 „ „	
101°–101.9°	- -	25 „	
102°–102.9°	- -	25 „ „	1 death
103°–103.9°	- -	19 „	
104° and over	- -	6 „ „	1 „
		106	

TABLE No. XII. G.—*Treatment of Morbid Cases of Genital Origin.*

Vaginal douching only - - -	3 patients
Utero-vaginal douching - - -	14 „
Local application to puerperal ulcers - -	9 „
Administration of vaccine - - - -	8 „
Laparotomy and drainage - - - -	1 patient
Administration of serum - - - -	1 „
„ „ and vaccine - -	1 „
Quinine only - - - - -	15 patients

* Two of these patients died within a few hours of their admission.

TABLE NO. XII. H.—*Utero-Vaginal Douches.*

	10 patients had	1 douche
	2 „	„ 2 douches
	2 „	„ 3 „
Total	14	

TABLE NO. XII. I.—*Nature of Infection and of Vaccine in cases in which Vaccine was used.*

No. of Cases	Infection	Vaccine Used	Results	Remarks
6	Streptococcus	Rotunda stock, strepto	Recovered 5 Died 1	In one case serum given also. *Vide* Table XIII. R. C.
1	Streptococcus & Staphylococcus	„	„ 1	*Vide* Table XIII. M. B.
1	Gonococcus	Rotunda stock, Gonococcal	Recovered 1	—

TABLE NO. XII. J.—*Number of Injections of Vaccine in each Patient.*

No. of Injections	No. of Cases	Results	Remarks
1	2	1 recovery	Death. *Vide* Table XIII. R. C.
2	2	2 recoveries	—
5	1	1 recovery	—
6	2	1 recovery	Death. *Vide* Table XIII. M. B.
8	1	1 recovery	—

TABLE No. XIII.—*Maternal Mortality.*

Name	Age	Para	Admitted	Delivered	Died	Cause of Death	Remarks
M. D.	29	I.	19.5.18	20.5.18	20.5.18	Eclampsia	In eclampsia ; comatosed on admission ; very jaundiced. Routine treatment (*vide* Table IX.) ; hæmorrhage noticed during rectal lavage. Some improvement, but not maintained. Cæsarean section ; practically no hæmorrhage on section of uterus. Died 10 mins. after delivery of child. *Post-mortem*—Hæmorrhages in kidney and liver, latter nearly disorganised
C. B.	33	VII.	4.6.18	4.6.18	4.6.18	Concealed accidental hæmorrhage	Pregnant, 8th month ; abdomen tender, size of full term pregnancy ; pulse 120–130. Cæsarean section performed. Patient died 1½ hours later, uterus not contracting properly. No *post-mortem*. (*Vide* Tables VI. and XI.
M. B.	39	I.	13.6.18	14.6.18	20.6.18	Peritonitis	Patient in charge of nurse for 24 hours before admission. Placenta prævia marginalis ; os 1 finger ; vagina plugged. Cæsarean section owing to patient's age. Patient died 6th day. *Post-mortem*—Profuse amount of pus in abdomen ; uterus septic and scar open for 2 ins.
M. C.	24	I.	9.7.18	9.7.18	12.8.18	General miliary tuberculosis	Pubiotomy, followed by natural delivery. *Post-mortem*—General miliary tuberculosis
M. B.	38	XV.	7.9.18	8.9.18	3.10.18	Sepsis	On 5th day temperature rose to 100° F. and continued high till end in spite of douches and vaccines. Cultures taken from uterus showed streptococci and staphylococci
E. S.	32	X.	15.9.18	17.9.18	17.9.18	Accidental hæmorrhage and *post-partum* hæmorrhage	Labour induced, by introduction of tents, for accidental hæmorrhage. Twins born ; both breech. *Post-partum* hæmorrhage and manual removal. Patient died an hour later

TABLE No. XIII.—*Maternal Mortality—continued.*

Name	Age	Para	Admitted	Delivered	Died	Cause of Death	Remarks
E. O.	28	III.	17.9.18	17.9.18	17.9.18	*Post-partum* hæmorrhage; shock	Severe *post-partum* hæmorrhage 5 mins. after birth of child; Pulse 140. Adherent placenta removed manually. Patient died 10 mins. later.
K. G.	23	V.	29.8.18	30.9.18	30.9.18	Accidental hæmorrhage; shock	Sent from country; history of severe hæmorrhage. Slight bleeding on admission; fair contractions; membranes ruptured with stylet; no further hæmorrhage external; pulse became worse; when os ¾ dilated cervix divided and forceps applied. Cervix sutured; placenta removed manually. Patient died 2 hours later
R. C.	25	II.	9.10.18	10.10.18	17.10.18	Pyæmia	Natural delivery; no examinations made; temperature raised 1st to 7th evening, highest 105° F.; 2 rigors; culture streptococci, vaccine and serum given. Laparotomy 7th day; pus in abdomen; abdomen drained. Patient died next morning
M. C.	37	I.	17.10.18	18.10.18	19.10.18	Asthma; cardiac failure	Patient had asthma 15 years; dyspnœa on admission; natural delivery; 2nd evening patient somewhat cyanosed, got sudden attack of dyspnœa and died in a few seconds
M. B.	33	I.	15.10.18	19.10.18	19.10.18	Broncho-pneumonia	In labour 3 days; no fœtal heart heard; os ¾ dilated; forceps; shoulders impacted, arms brought down; cervix torn; cervix stitched; patient somewhat cyanosed all day. On admission, temperature 102°, pulse 100; next evening, temperature 102.4°, Pulse 100. Died 12 hours after delivery. *Post-mortem*—Double broncho-pneumonia

REVIEWS.

Manual of Anatomy : Systematic and Practical, including Embryology. Originally written by the late A. M. Buchanan, M.A., M.D., C.M., F.R.F.P.S. (Glas.). Fourth Edition. Edited by a Committee of Anatomists in London. University Series. London : Baillière, Tindall & Cox. 1919. Demy 8vo. Pp. xii + 1,743.

The first edition of Buchanan's Manual appeared in 1906. That a fourth edition is already required is a proof that the work is popular and supplies a demand. In the skilled hands of Professors Barclay-Smith, J. Ernest Fraser, F. Wood Jones, G. F. Parsons and W. Wright, who are acting as joint editors, Buchanan's Anatomy should have a most successful future. Few changes have been made, and wisely the size of the work has not been increased. The general arrangement of the sections of the earlier editions is unaltered. The inclusion of the description of such muscles as the complexus, rotatores, spinæ, trachelomastoid (longissimus capitis), &c., in the chapter devoted to the upper limb is somewhat confusing, but it is admittedly most difficult to work out a satisfactory plan for a book which may serve as a text-book as well as a work for use in the dissecting room.

In their preface the editors state that they are confirmed in their original determination to retain the "old" nomenclature which has always been a special feature of the book.

Unfortunately before the appearance of the Report of the Basle Nomenclature Committee in 1895, there did not exist in English text-books an accepted nomenclature in the sense of a single accepted name for each structure. Had such a nomenclature been in existence there is no doubt that the B. N. A. nomenclature would not have made any headway in this country, or in the distant parts

of the Empire. As a matter of fact, in a very large number of cases, it is not possible to state what is the "old" name for a given structure. Various text-books issued before and since 1895, therefore, have been compelled to give several names for a vast number of structures, unless their authors have accepted the B.N.A. terms, and used them only. Buchanan's Manual is no exception. The editors have felt it necessary to give two, or three, names for the same structure in a very large number of cases. For example, the urethral crest receives four names in all, and the prostatic utricle the same number. In this way much needless difficulty is placed in the path of students and much confusion arises. A work like Buchanan's Manual is indeed the strongest possible argument for a revision of Anatomical Nomenclature and for the selection of, in the case of each structure, one name which shall be accepted in all English-speaking countries. At the time when the Basle Committee issued its suggestions as regards nomenclature, no uniform series of names existed in English or Continental text-books.

Nomenclature was in a state of flux, and newer editions often used other names than those found in earlier issues of the same work. The Basle Committee did not set out to re-name structures and to propose a new set of names; their object was, as far as possible, to select the best name among those already in use. Several errors were admittedly introduced, but as a whole a most useful and honest effort was made to simplify nomenclature and reduce the difficulties attending the study of anatomy by selecting one, and only one, name for each structure. Since 1895 several of the terms proposed by the Basle Committee have found their way into almost every English work dealing with anatomy. Buchanan's Manual, in spite of the determination of the authors to shun B.N.A. terms, is no exception. For instance the term "genito-femoral" nerve is now used throughout the work although in the first edition the "old" name "genito-crural" was retained. It would almost appear as if the authors themselves had failed to realise their acceptance of the much better name put for-

ward by the Basle Committee, for in the Appendix it is explained that genito-femoral is the Latin (Basle) name applied to the genito-crural nerve. "Quadrate lobule" is given as the English name for the part of the brain known in the Basle Nomenclature as "præcuneus." Nevertheless "præcuneus" is the term used in the figure of a mesial section of the brain, and it is given in the text also. As is well known "femoral" nerve is the name accepted by the Basle Committee for the nerve described as "anterior crural" in the older editions of English text-books, including Buchanan's. This is shown in the appendix of the fourth edition where "anterior crural" is given as the English equivalent of "femoral nerve" (Latin, Basle). The newer editions of Buchanan's work have gone so far as using the term "anterior femoral," and no other name for this nerve is used in the text, although curiously enough "anterior crural" is the only name retained in the index. As there is no nerve to which the name "posterior" femoral is applied it is possible that in the next edition the authors may see fit to adopt "femoral" for the nerve in question in spite of its objectionable Basle connection. Again, we are told in the appendix that "sinus pedis is the English equivalent for the Latin (Basle) "sinus tarsi," and sinus pedis was used in the first edition. The text of the third and fourth editions has, however, adopted "sinus tarsi" and followed the "Latin (Basle)" and not the "English" nomenclature.

For a work whose special feature is the retention of the old in contradistinction to the Basle nomenclature the terms used in the chapter on the Central Nervous System are very remarkable. We would expect at least to find the word "brain" in the text, but throughout we find instead "encephalon," without any direct statement that "brain" is meant. Thus the main section is entitled "encephalon"; we are told that the "encephalon" is the part of the cerebro-spinal axis that lies in the cranial cavity, but we are not told that it is the brain; we have a general description of the "encephalon," figures of the base of the "encephalon," and of "the encephalon right

lateral view"; sub-sections entitled, "Arteries of the Encephalon," "Veins of the Encephalon," "Development of the Encephalon," and "Meninges of the Encephalon." It is only after a search that we find the word "brain," which is surely the "old" name, in the legend of a figure, showing arteries, and in short paragraphs in smaller type dealing with lymphatics and weight of the brain. Further, throughout the whole section the terms applied to the sub-divisions of the brain are very largely those adopted by the Basle Committee.

Enough has been said to indicate that even those authors who are anxious to take into account "recent and manifest signs of objection to the terminology known as B.N.A." cannot avoid following its lead in certain cases, nor can they maintain the use of the "old" nomenclature without laying a great burden on students by introducing several names for many individual structures. Clearly what is wanted is a revision of nomenclature and the adoption for each structure of a single name which may be accepted in all English-speaking countries. The adoption of such a uniform simple nomenclature would be of the greatest advantage to all who read surgical and medical literature, as well as to those interested in anatomy. Several of the universities and medical schools have expressed themselves as most anxious to see such a plan carried out, and it is to be hoped that the Committee of the Anatomical Society which has the matter in hand will be able to secure the cordial co-operation of the United States of America and of the Dominions beyond the sea.

The last twenty pages of Buchanan's Anatomy form an appendix entitled "Anatomical Nomenclature." Here we find in parallel columns what purport to be "English" and "Latin (Basle)" names for a limited number of anatomical structures. Curiously enough we are told that "pharynx" is the English name for "pharynx," "larynx" for "larynx," and "Epiglottis" for "Epiglottis," whereas in most cases there is a difference in the "English" and the "Latin (Basle)" equivalents. Many errors are to be found. For example, the name "canalis

condyloideus," instead of "canalis hypoglossi" is given as the B.N.A. term for "anterior condylar foramen"; "sulcus mastoideus" is given instead of "incisura mastoidea" as the B.N.A. term for "digastric fossa"; "tubæ auditoriæ" is used in several places instead of tubæ auditivæ; "processus condylaris" is given instead of processus condyloideus; "ligamentum sacrospino-tuberans" and "ligamentum sacro-ischio-spinosum" instead of "ligamentum sacro-tuborosum" and ligamentum sacro-spinosum. Lastly, we may mention that the "Latin (Basle)" equivalent for politeal surface of the femur is stated to be "trigonum femoris" instead of planum popliteum," and that several errors occur among the "Latin (Basle)" terms for the parts of the large intestine. Surely the authors with advantage might save twenty pages in future editions by the omission of this very imperfect and inaccurate appendix devoted to nomenclature.

Synopsis of Medicine. By Henry Letheby Tidy. Bristol: John Wright & Sons, Ltd. 1920.

Dr. Letheby Tidy has collected a vast amount of material into a comparatively small compass—"A Synopsis of Medicine," just published, is a companion volume to Hey Groves' well-known Synopsis of Surgery. Osler's "Principles and Practice of Medicine" has been followed in the main plan of the work, but the author has evidently spared no pains to search up contemporary authorities on different subjects.

The work is up to date, as will be evident more particularly in the section on cardiac affections and on diseases of deficiency and metabolism. The latter includes an excellent summary of the physiology and chemistry of metabolism, ensuring the student a good explanation of the factors underlying these diseases. The section on

tuberculosis is a masterpiece of conciseness. In less than 50 pages the author has provided a wonderfully complete summary of the disease. A feature of the work is the excellent synopsis of the bacteriology of diseases caused by micro-organisms.

Taken all round, the volume is thoroughly deserving of the success we predict for it. It should prove a boon to the student who, on the threshold of his "final," requires a reliable and complete condensation of his work. As a volume of reference for the practitioner and teacher in medicine it should prove very useful. The arrangements of paragraphs and headings bring out the different points of each condition excellently, and a very complete index is provided. We anticipate an immediate and increasing success for the work.

The Bradshaw Lecture on the Surgery of the Heart. By Sir Charles A. Ballance. London : Macmillan & Co. 1920. Pp. 154.

Napoleon's surgeon, Baron Larrey, believed that practitioners took too grave a view of the effects of pericardial wounds, and were open to the same reproach respecting certain wounds of the heart. This valuable survey of cardiac surgery by Sir Charles Ballance is a fine tribute to Larrey's judgment.

Since 1912, 152 cases of operation for injury of the pericardium and heart have been published : 48 died and 101 recovered. By far the greater majority of these cases were wounds of the heart itself.

A good summary of operative methods is given. The surgeon must be guided in his choice of operation by the position of the wound. If he can disregard the external wound, the Delorme-Mignon flap with removal of the 4th, 5th, and 6th cartilages is recommended. Ballance dislikes

the chondroplastic flap of Kocher because a dead space is left.

The Duval-Barasty operation gives the best exposure, and has had many successes, but it involves transverse and longitudinal division of the sternum and division of the diaphragm and abdominal wall. When the lung or pleura are injured, Ballance emphasises the advantage of using Spangaro's long incision in the fourth intercostal space with disarticulation of the adjacent costal cartilages. It permits of draining the oblique sinus of Haller, and he shows clearly that drainage of this sinus is one of the most important problems of cardiac surgery. Fluid in the pericardium pushes the heart upwards and forwards: when fluid is withdrawn the heart falls downwards and backwards, closing the mouth or the oblique sinus, which is thus a trap for infection.

Ballance finds it excellent practice to pass silk fixation stitches through the apex of the heart, for the organ is like a live fish in the gloved hand. Moreover, if the heart is pulled upwards and forwards the great vessels are kinked, and hæmorrhage is reduced. Before incising the heart he inserts long Lembert stitches along the proposed line of incision. This is a valuable and time-saving step.

The illustrations are excellent, but the table of operative results at the end of the volume might, with advantage, be greatly elaborated in view of the immense interest of the subject.

Manual of Neurasthenia. By I. Geikie Cobb. London: Baillière, Tindall & Cox. 1920.

This is a valuable survey of the causation and treatment of neurasthenia as distinct from the other neuroses and psycho-neuroses.

The author reviews the whole field explored from Beard—the originator of the name in 1868—till Freud of the present day.

The term neurasthenia is reserved to-day by psycho-

pathologists for conditions of nervous and mental exhaustion which cannot be accounted for by physical factors or by other neurotic affections. Where there are physical agents (*e.g.*, toxic conditions, exhausting diseases, old age, &c.), it is kept distinct also from other nervous abnormalities, such as hysteria, psychoses, &c. To these the terms nervous and chronic nervous exhaustion are applied. The author, however, examines the whole question of nervous exhaustion (from whatever cause either mental or physical) and its treatment in a most impartial way, including sections on psycho-therapy, organo-therapy and electro- and hydro-therapy, &c.

The volume should be of great assistance to the general practitioner.

ABSTRACTS OF CURRENT LITERATURE.

GYNÆCOLOGY, &c.

GEIST, S. H.: *Conservatism in Treatment of So-called Essential Uterine Hæmorrhage.* "Surg., Gyn. and Obstet." August, 1920.

IT was suggested to Geist, in view of the fact that the pathological findings in the endometrium in cases of "essential" uterine hæmorrhage so closely resembled an exaggeration of those of the normal pre-menstrual phase that the condition might be due to disturbed ovarian function. With this in mind, he examined the ovaries of 41 cases of the condition. He found constant numerous cystic follicles with degeneration of epithelium and ova and the occurrence of cysts lined with lutein cells.

Medicinal treatment and curettage have at best only temporary success: *x*-rays or hysterectomy, with or without removal of ovaries, cures the condition, but only at great sacrifice to the patient. Until organo-therapy is further advanced, the author suggests that good may be done by removal of cyst-bearing areas, or, if cysts cannot be demonstrated on the surface, resection of the greater portion of the functioning ovaries.

POLAK, J. O.: *Total Hysterectomy in Fibroid Tumours of the Uterus.* "Jour. Amer. Med. Assoc." Vol. 75. No. 9.

HICKS, E. S.: *Fibromyomata: Especial Reference to Radium Treatment.* "Canadian Med. Assoc. Jour." Vol. X. No. 7.

POLAK prefers the total to the sub-total operation for fibroid tumour of the uterus. He states that he has been able to collect 256 cases in which cancer has occurred in the cervical stump after sub-total hysterectomy, but no percentage is mentioned. He quotes the statistics of Schottlaender, Spencer and Noble, showing that after routine serial section of uteri removed in more than 900 total hysterectomies for fibroid uterus, carcinoma of the cervix co-exists in more than 2 per cent. of all cases. According to Polak, the mortality percentage for the total operation is 2, for the sub-total

1.5, but the morbidity of the former is said to be less than the latter. The article is beautifully illustrated by drawings to demonstrate the technique of the complete operation.

Hicks has written an article with special reference to radium treatment. He states that three or four cases suitable for radium treatment are met with to each case suitable for operation. When the latter is undertaken the supravaginal operation is performed Radium is used in its tube form—a glass capsule in a silver container. This is enclosed in a special capsule of a brass alloy to which is fastened a chain, the chain being fastened to the napkin or a bandage to guard against almost loss of the radium. The capsule is enclosed in a rubber finger cot. The patient is prepared as for a curettage; no anæsthetic is given as a rule. Morphine is given to allay nervousness, and Hegar's dilators used one after the other till the operator feels that he can insert the radium apparatus. This takes about one-half the dilatation one needs for an ordinary curettage. Many of these myomatous uteri have very pendulous canals, and the radium can be easily inserted. As a general anæsthetic, a few whiffs of ether are used in cases with a hard cervix and small canal. In all cases clinically doubtful, a curettage is performed, if necessary, under ether, and carcinoma excluded.

One thousand to one thousand eight hundred milligram hours are used at one dose, and in the majority of cases one dose will suffice. The patient is kept in bed from two to four days. In some cases this method is combined with hard ray treatment from special *x*-ray tubes, using 20-X to each field. The tumours disappear more or less rapidly, according to the type, the time varying from three months to a year.

This communication is especially of interest in view of the discussion which took place at the annual meeting of the British Medical Association, which is reported in the *British Medical Journal*, No. 3,119.

Bethel Solomons.

Herrick, W W.: *Some Phases of the Circulatory Disturbances of Pregnancy, with an Illustrated Case.* "Medical Clinics of North America." Vol. 4. No. 1.

Herrick relates the history of a woman who gave birth to a four months' macerated fœtus, two months after which she developed "so-called asthma." The paper leads the reader to believe that the cardiac dilatation with insufficiency of the mitral tricuspid and pulmonary valves, arterial hypertension, congestion of lungs and liver with moderate anasarca, were all consequent on pregnancy. He does not suggest the very feasible theory that the general circulatory disturbance might have been the cause of the miscarriage. The after-treatment of the case is clearly given.

Herrick is very insistent on the importance of this, and recommends wisely that when the obstetrician has finished his work the subsequent care should be left to the internist (physician). Further pregnancies need not be interdicted, but the risk is one to be carefully considered. During subsequent pregnancies supervision is advisable.

BETHEL SOLOMONS.

SCHOCHET: *The Physiology of Ovulation.* "Surg., Gyn. and Obstet." August, 1920.

IN a preliminary report, Schochet gives an account of experiments to determine the presence of proteolytic ferments in the liquor folliculi in the ovaries of the pig. He shows there is an enzyme, its nature being similar to erepsin, that there are also other proteolytic ferments, also a lipase. These ferments play an important part in the expulsion of the ovum. He has also been able to watch the growth of follicles in homoplastic ovarian grafts transplanted in a rat's eye. He notes that ovulation takes place twenty-four hours after parturition, and usually every thirty days. Further work is being done with regard to fertilisation in these transplants.

J. S. E.

LANCASTER, BURNETT AND GAUS: *Mercurochrome—220. A Clinical and Laboratory Report on its Use in Ophthalmology.* "Jour. Amer. Med. Assoc." September 11, 1920.

THIS new synthetic compound, produced in the laboratories of the Brady Urological Institute, is a mixture of fluorescein and mercury. The authors urge its extensive trial by ophthalmologists in cases of conjunctivitis (especially of the gonorrhœal type), and corneal ulceration. They point out the increased germicidal possibilities of the drug, when combined with the penetrating quality of the dye.

The laboratory tests are convincing. The authors themselves realise, however, that it is only by numerous clinical experiments that the compound can become of more than academic interest.

E. M.

WILLMOT, F. C., and ROBERTSON, G. W.: *Senecio Disease.* "Lancet." October 23, 1920. Pp. 848.

IN 1918 the attention of the Health Department of the Union Government of South Africa was called by Dr. L. Albertijn, M.D. Univ. Dubl., to certain cases of sickness of obscure causation occurring in the George District of the Cape Province. Whole families had suffered from time to time from a complaint, of which the chief symptoms were abdominal pain, nausea generally followed by vomiting, rapid development of ascites in all severe

cases, and signs of collapse. Blood is often vomited or may be passed in the stools. The temperature is generally normal or subnormal. The liver soon becomes enlarged. The disease had existed in the George and Mossel Bay districts for at least ten years previous to the inquiry by the authors, and during that period some 80 cases—many of them fatal—had occurred. At the time of the inquiry there were about 11 cases. The majority of these patients subsequently died.

In a recent fatal case of this disease in the George district, the liver, at autopsy, was found enlarged, its edges rounded. Microscopic examination of sections showed in places the capillaries between the hepatic cells to be distended with blood, the central venule dilated, the liver cells reduced in size, some containing brown pigment, and others fatty particles. The more advanced cases showed similar sized areas of a lighter colour than the liver substance. On microscopic examination the usual round-celled infiltration and formation of new fibrous tissue—met with in cirrhosis (fibrosis) of the liver from other causes—was the most marked change.

These appearances seemed to the authors to justify the name "Cirrhosis of the Liver due to Senecio Poisoning."

It was suggested—presumably by Dr. Albertijn—that the disease was of dietetic origin, and samples of meal and wheat, bread from which was known to have been eaten for some time by affected persons, were therefore examined. Investigation showed that the plants known as *Senecio ilicifolius* and *Senecio burchelli*—species of the groundsel genus *Senecio* N. O. *Compositæ*—grow as weeds, in the wheat-fields at George, and that when the wheat is threshed, seeds and portions of these plants frequently remain behind, and are sold with the wheat. Should the wheat be milled in mills of old-fashioned type, where winnowing is not efficient, the seeds are also ground with the wheat grains into meal.

The authors admit that further inquiry and research are necessary, but it seemed desirable to place their preliminary investigations on record.

J. W. M.

[Note.—The term Senecio is classical, being used by Pliny. So also is the Green equivalent, Ἡσγέθων found in Theophrastus, and meaning "early-old" from the hoary down of the groundsel. The relation of "Senecio" to "Senex" is obvious.]

Kyrle J., and Rienstierna, J.: *An Experimental Study of Aleppo Boil.* "Acta dermato-venereologica." Vol. I. Fasc. 1.

Although the clinical descriptions and pathology of Oriental Sore are well known and understood, yet there are many points still requiring elucidation. Thus many authors describe the anatomical appearances as resembling lupus. Others describe a perfectly simple inflammation.

Again, many investigators find the causal organism abundantly in the infiltration, while others have only found a very small number after prolonged search.

The question of immunity also is undecided—whether absolute or relative; and at what period after infection such immunity develops.

Experiments were undertaken with a view to clearing up these points. Material was obtained from Oriental sores occurring on a colleague, who had been a prisoner of war in Russia, and had returned through Persia and Turkey. These sores, to those unfamiliar with them, bore a close resemblance to syphilitic sores not only in the character of the ulceration, the colour and the infiltration, but in their painlessness.

Material from these sores was inoculated through five generations into monkeys and dogs. At the site of a successful inoculation a small nodule would develop in the course of about ten days. This grows slowly for some four months, then the skin becomes inflamed, crusted over, and finally ulcerated. Eventually the ulcer, if left alone, would heal, forming a cicatrix.

The original sores histologically presented a lupoid structure Leishman bodies were only found with the greatest difficulty in very small numbers. They were, however, easily and profusely found in the early stages of the experimental sores before the latter had taken on a lupoid structure. The more this histological appearance became manifest the fewer were the organisms found.

It was found that where two inoculations were made simultaneously into the same animal, the one developing first did not prevent the other developing, but did retard its evolution.

In the monkeys the time of evolution of the lesion was much decreased in successive generations, showing that the virulence of the organism had increased. It is suggested that a greatly heightened virulence might, by breaking down the skin resistance, cause a general blood infection (as Kala-Azar).

Histological slides showed the following four stages :—

1. Simple inflammation with parasites in great abundance.

2. Simple inflammation with some admixture of lupoid elements, while the parasites are observed to be fewer.

3. Lupoid tissue predominates, and the organisms are becoming very scanty.

4. The microscopic appearances are purely those of tubercular tissue, while the parasites are only seldom to be seen after prolonged search.

An animal with a fully-developed sore is immune to further infection, but failure to "take" on one occasion may be followed by a successful infection during a period of hypersensibility.

Finally, a generalisation of the virus, although suggested, has not yet been established.

W. J. H.

Stewart, W. H., and Stein, A.: *Röntgen-ray Study of the Abdominal Organs following Inflation of the Peritoneal Cavity.* "Amer. Jour. of Röntgenology." November, 1919.

Pneumo-peritoneal Röntgen-ray Diagnosis. "Jour. Amer. Med. Assoc." July 3, 1920.

Most of us know that the introduction of air into the body cavities intensifies the shadows of the soft parts, bringing out details which cannot be obtained otherwise. This method has been employed in the examination of the bladder and kidneys, colon, cerebral ventricles, &c. It was first employed by Kelling in 1902 in a case of ascites, and in one of carcinoma of the stomach. In 1913 Jacobeus, of Stockholm, published his experiences of 17 cases, in which he obtained excellent results. By the method he recognised metastatic nodules in the liver, and carcinoma of the stomach and intestines. Weber, of Kies, Lorey, Meyer-Betz, Rautenberg, and many others, some of whom used oxygen and others nitrogen to inflate the abdomen, have recorded their experiences, and they have succeeded in showing clearly and with great detail the outline of the liver, gall-bladder, spleen, kidneys, and coils of intestine without bismuth.

Stewart and Stein have examined 37 cases in which the results have been somewhat startling. Not only did they find the diaphragm completely separated from the liver, and obtain a detail of the liver that had never before seemed possible, but, in addition, they succeeded in accurately outlining the spleen with its pedicle, both kidneys, and under special technique they obtained shadows of the uterine appendages. In one case they detected a chain of enlarged mesenteric glands; and intra-peritoneal adhesions involving the anterior abdominal wall were easily shown.

The technique for inflation is, they say, extremely simple. The intestinal tract is thoroughly cleansed and the bladder emptied. The patient lies on his back, and having scrubbed and sterilised the skin with tincture of iodine, a point is selected about one inch to the right or left and two inches below the umbilicus (abdominal scars are to be avoided), where an ordinary lumbar puncture needle is passed obliquely downwards until it reaches the fascia, and then gently through the fascia muscle and peritoneum. The plug is withdrawn, and the needle is connected by a rubber tube to the oxygen tank. The gas is allowed to flow gently, sufficient being used to render the abdomen dome-shaped—usually about 4 litres. The tube is then disconnected and the needle withdrawn, and the puncture covered with adhesive plaster—the entire procedure having been conducted under modern aseptic precautions. The patient may complain of a sense of fulness from distension, and may have some pain in the shoulders, which soon disappears.

After about an hour, when the patient becomes accustomed to the distension, the *x*-ray examination is made. The oxygen is gradually absorbed, and it disappears almost completely in twenty-four to forty-eight hours.

The cardinal point to be borne in mind in making the *x*-ray examination is that the particular organ to be investigated must be placed in the highest possible plane in order that it may be completely surrounded by gas.

Very lucid directions are given for position and technique to obtain the best results for the various organs, and there are many beautiful illustrations which are in themselves convincing.

The chief risks are infection, and of puncture of the intestine, and as regards the second they say "that with care there is no danger of puncturing the intestine." It has been demonstrated that the intestines recede from the point of a needle when passed through the abdominal wall of a live rabbit, whereas the moment the rabbit died puncture would occur.

In a more recent paper on the same subject the same authors have utilised the procedure in 80 cases without untoward effects. The ages of the patients varied from four to seventy-four years. They advise that the method should be reserved for these obscure cases in which a clearer outline than that which can be secured under the ordinary röntgenographic arrangements is desired.

There is no alteration in the technique, but they have found it advisable to administer one-sixth of a grain of morphine half-an-hour before pneumo-peritoneum is established. They regard the method as strictly surgical, and one that should be attempted only by one with surgical experience. The air or gas used does not necessarily need to be sterilised—a view borne out by the experience of Rautenberg and Schmidt. Their own practical experience, and that of Alvarez, has shown that there is no risk of puncturing the intestine. No heart symptoms have accompanied the inflation except a slight rise in pulse. After the *x*-ray examination has been completed, and when the patient has been brought back to bed, they now deflate the abdomen by re-introducing the needle as before, and allowing the gas to escape. This relieves the patient of any real or imaginary inconvenience which might be connected with the procedure.

The contra-indications to the employment of the method are acute abdominal conditions, valvular disease of the heart, and alcoholism.

MAURICE R. J. HAYES.

OBITUARY.

ALCORN, SAMUEL ALFRED. Died August 20th, 1920. Son of the late Rev. John Alcorn, of Cashel. Educated in Trinity College, Dublin; B.A., 1880; M.B., B.Ch., 1883, Dub. Died at Sydney, Australia.

BARNES, LEOPOLD JOHN JOSEPH. Died October 15th, 1920. Educated at Queen's College, Galway, and R.C.S.I.; L.R.C.S.I., 1868; M.D., 1869, Q.U.I.; Surgeon Erith Hospital; Medical Officer, Dartford Union. Died at Erith, Kent.

CAMPBELL, FINTON JAMES. Died October 25th, 1920. M.B., B.Ch., B.A.O., 1919, N.U.I. Died at Hong Kong.

DELANY, THOMAS HENRY. Died October 10th, 1920. Educated at the Catholic University School; M.B., B.Ch., B.A.O., 1893; M.D., 1905, R.U.I.; F.R.C.S.I., 1906; Lt.-Col. I. M. S. (retired); Assistant Surgeon, Royal Victoria Eye and Ear Hospital, Dublin; Fellow of the Royal Academy of Medicine in Ireland.

HODGSON, GEORGE JAMES, 5 Grosvenor Place, Rathmines. Educated at Royal College of Surgeons and City of Dublin Hospital; L.R.C.S.I., 1875; L.K.Q.C.P.I., 1882; late Surgeon under Contagious Diseases Act for Curragh. Died 1886. Obituary Roll, "Irish Medical Directory," 1887.

McMATH, ARTHUR WILLIAM. Died October 2nd, 1920. Educated at the Carmichael College, Dublin, and R.C.S.I.; L.R.C.S.I., 1880; L.R.C.P., 1883; late Government Medical Officer, Dungog, New South Wales. Died at Gerrard's Cross, Bucks.

MITCHELL, JAMES. Died September 13th, 1920. Educated at Belfast and Glasgow; L.R.C.P. Edin., 1882; L.R.F.P.S. Glasgow, 1882. Died at Rossnowlogh, Co. Donegal.

O'REILLY, GEORGE JOHN. Died October 8th, 1920. Educated at the Ledwich and Carmichael Schools, Dublin; L.R.C.S.I., 1875; L., 1875; M.R.C.P.I., 1883; late Demonstrator in Anatomy, Ledwich School of Medicine. Died at Catford, London, S.E.

TUBB, THOMAS JOHN. Died September 27th, 1920. Educated at Cork, Edinburgh, and Cambridge; L.R.C.S. Ed., 1879; L.R.C.P.I., 1886; D.P.H., R.C.P. & S.I., 1896; for twenty-one years Medical Officer of Health for the County of Wilts.

LITERARY NOTE.

Messrs. Christophers, of 22 Berner's Street, London, W., are shortly publishing a book by Mr. A. H. Tubby, entitled "A Consulting Surgeon in the Near East."

The work details his experiences in that capacity in Gallipoli and Egypt during the years 1915-1919.

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ORIGINAL COMMUNICATIONS.

ACIDS AND ALKALIES. PART I.—MODERN METHODS OF ESTIMATING THE REACTION OF PHYSIOLOGICAL SOLUTIONS.

By WILLIAM FEARON.

The importance of acids and alkalies has long been recognised in connection with the normal and abnormal changes in the organism. It is well known that the human body is able to keep itself in a state of balance between acidity and alkalinity: it is sensitive enough to respond to the most minute alterations in the reaction of the circulating fluids and at the same time has the power of neutralising those alterations within relatively wide degrees.

It is doubtful if anything in the animal body is more

constant than this reaction-equilibrium of the fluids which bathe the tissues, it is the keystone of the bridge of life and it is supported on either side by elaborate chemical processes which are called into action whenever any change occurs in the body which leads to increased acid or alkali formation.

During digestion, various organic and inorganic acids are being formed and poured into the blood stream, but owing to the adjustment of the salts of the blood these acids are neutralised and the reaction of the blood does not change. The organic acids are mostly removed by tissue oxidations or syntheses and the ammonia resulting from the break-down of the amino-acids is converted into the neutral substance urea, and excreted. If, however, owing to a change in diet, the acids entering the blood are beyond a certain value, an additional compensating mechanism is called into action and some of the ammonia formed from the amino-acids is utilised to neutralise these acids, hence the excretion of urea falls and the excretion of ammonium salts rises.

From the purely medical aspect the break-down of this compensating mechanism is of more interest than its normal functioning, but the study of such a break-down has been rendered difficult in the past owing to the obscure notions of the meanings of acidity, alkalinity, and neutrality when applied to organic fluids and tissues. The term " acidosis " is applied to a series of changes brought about by the excessive withdrawal of bases from the organism, but even in the most severe acidosis there is little if any alteration in the reaction of the blood to litmus or similar indicators. Obviously in such a case an indicator may give most misleading information.

Again, blood is normally alkaline when tested by litmus or methyl orange but acid or neutral to phenolphthalein, a state of affairs that has given rise to some confusion.

This is occasionally ascribed to an *amphoteric* property of blood, also found in milk, protein solutions, gastric juice, and the like.

Amphoteric here implies that these solutions can be both acidic and basic at the same time, which, from a strict scientific standpoint, is nonsense.

The uncertainties attending the use of the words *neutrality*, *acidity*, *alkalinity*, have been to a large extent removed by the researches of recent years on methods of measuring these conditions.

Definition of Acidity and Alkalinity :—*Any substance which can give rise to free hydrogen-ions when in solution is an acid, and the degree of acidity of any solution is expressed by the number of free hydrogen-ions contained in one litre.*

Any substance which can give rise to free hydroxyl-ions when in solution is a base.

A neutral solution is one which contains an equal number of hydrogen and hydroxyl-ions; an acid solution contains an excess of hydrogen-ions and an alkaline solution contains an excess of hydroxyl-ions.

Strong and Weak Acids :—All true acids contain replaceable hydrogen, and when acids are added to water some of the hydrogen breaks away as ions and remains in this form in the solution.

Some acids, such as nitric acid, give rise to a relatively large number of these hydrogen-ions, these are the "strong" acids. Others, such as boracic acid, give rise to very few ions. It is this degree of dissociation into ions which determines the strength of an acid.

Thus, decinormal solutions of hydrochloric and acetic acids, for instance, contain the same weight of replaceable hydrogen (0.1 gm. per litre) and require the same quantity of standard alkali to neutralise equal samples of each solution. But nearly 90 per cent. of the hydrogen of the hydrochloric acid has been dissociated into H-ions, whereas only 1.3 per cent. of the acetic acid has been so dissociated.

Consequently, decinormal hydrochloric acid is about seventy times as strong as decinormal acetic acid.

Neutrality:—Pure water is very slightly dissociated into H-ions and HO-ions.

$$H_2O \rightleftharpoons H + OH$$

Since for every H-ion there must be a corresponding HO-ion pure water is, by definition, neutral in reaction. Consequently, pure water is taken as the standard of neutrality.

It has been shown that the concentration of H-ions in pure water is only 1 gram in 10,000,000 litres at 21°C, or, a litre of pure water contains $\frac{1}{10000000}$ gms. H-ions, that is, 10^{-7} gms. H-ions at 21°C.

Hence, a neutral solution is one that contains 10^{-7} gms. H-ions per litre, an acid one contains more, an alkaline one contains less. It is convenient to measure both acidity and alkalinity in terms of H-ions, omitting the reference to the HO-ions, and taking the pure water as the standard of neutrality. The reason why water, a neutral solution, can be spoken of as containing H-ions and yet not being acid is due to the fact that there is an equal number of HO-ions present, and since it can be proved that the (concentration of H-ions) × (concentration of HO-ions) equals a constant for solutions at the same temperature, it does not matter whether we chose H-ion or HO-ion as the method of measuring the reaction of the solution.

P_H Notation:—For convenience, Sörensen has suggested that all these concentrations of H-ions be written as logarithms to the base 10, that is to say, instead of writing in full $\frac{1}{1000000}$ or 10^{-6} as the H-ion concentration of $^{N}/_{1000000}$ HCl, Sörensen expresses it as the index or exponent of the term 10^{-6}, that is, -6, the 10 being understood. For brevity the minus sign is omitted and the index is now spoken of as the P_H of the solution. P_H is called the hydrogen-ion exponent

and is the logarithm of the H-ion concentration to the base 10, the negative sign being omitted.

Examples :—An acid may have a H-ion concentration of $10^{-4.5}$ gms. per litre, its $P_H = 4.5$.

Pure water has a H-ion concentration of 10^{-7} or $P_H = 7$.

P_H 1 is the H-ion concentration of $^N/_{10}$ acid, if completely ionised.

P_H 6 is the H-ion concentration of $^N/_{1,000,000}$ acid.

P_H 7 is a neutral solution.

P_H 8 is the H-ion concentration of $^N/_{1,000,000}$ alkali.

P_H 13.2 is the H-ion concentration of $^N/_{10}$ alkali.

These are some practical points to remember in connection with the P_H notation. Since it represents a minus exponent, *the larger the P_H the smaller will be the H-ion concentration. e.g.* :

$\frac{N}{1000}$ is stronger than $\frac{N}{10,000}$.

Hence, the $P_H = 3$ stands for a higher concentration of H-ions than $P_H = 4$, since 10^{-3} is a larger fraction than 10^{-4}.

Acid solutions have P_H less than 7, alkaline solutions have P_H greater than 7.

The P_H Notation is troublesome at first but very soon becomes familiar : it is merely a form of chemical shorthand and is useful for rapidly expressing the reaction of a solution. It may be summarised practically as follows :—$P_H = 7$ stands for neutrality, any value above this is alkaline ; any value below this is acid.

Determination of the Hydrogen Ion Concentration and P_H of solutions.— The absolute method is by means of an electrical apparatus which measures the difference is potential between an electrode in a solution containing a known number of H-ions and a similar electrode in the solution of unknown concentration.

The apparatus is complicated and requires skilled

manipulation. For general use, the indirect indicator methods as developed by Sörensen, Walpole, Cole and Onslow, Clark and Lubs, are very convenient and sufficiently accurate.

An *indicator* is a substance that varies in colour-tone with changes in the H-ion concentration of a solution. With H-ion concentrations below a certain value it is one colour, with H-ion concentrations above a certain value it is another colour, between these values there is an intermediate region. A series of indicators have been prepared which will show changes in P_H from 1.7 to 9.7, and by means of these it is possible, following a routine technique, to determine in a very short time the H-ion concentration of solutions. When the fluid under examination is a coloured one such as urine, it is possible by means of comparators to allow for this.

By employing these indicators the H-ion concentration of a certain fluid can be determined. For accurate work, it is necessary to have a series of standard solutions of known H-ion concentration prepared and to compare the colours obtained by adding equal amounts of the same indicator to equal volumes of the unknown solution and the standard solutions, the particular standard solution that under these conditions most nearly matches the tint of the unknown solution will have a corresponding H-ion concentration.

This method is very rapid and has been applied to pathology as well as physiology with encouraging results. Details are given in Cole's "Practical Physiological Chemistry," 1919, and in the Special Report, No. 35, "The Reaction of Media," published by the Medical Research Committee, 1920.

For some physiological fluids, such as blood, the H-ion concentration as measured by electrometric or colorimetric methods is extraordinarily constant. Other fluids, such as urine and the contents of the alimentary tract may vary considerably within certain limits.

Thus, using an indicator method, I found the reaction

of fresh urine to vary during the day from P_H 5.2 to P_H 7.4, with an average value of P_H 6.4.

Henderson and Palmer have published (1915) the results of a very extensive series of daily analyses of the urine of forty-four cases during a period of nearly a year. Their average values for nephritis are all on the acid side of neutrality, *e.g.*, acute nephritis, P_H 5.1. Chronic nephritis, P_H 4.9.

Optimum Reactions of Enzymes:—The application

Reactions of Physiological Fluids in P_H.

Pancreatic Juice	8.3 (Auerbach & Pick, 1912)
Intestinal Contents ...	8.3 (Auerbach & Pick, 1912)
Bile	7.8 (Okada, 1915)
Blood	7.4 (Michaelis, 1914)
Human Milk	7.1 (Clark, 1915)
Pure Water	7.0
Normal Wine (average) ...	6.0 (Henderson & Palmer, 1912)
Plant Sap	5.3–5.8 (Wagner, 1916)
Gastric Juice	0.9–1.6 (Menton, 1915)

of the H-ion method of determining reaction has simplified enzyme study considerably, and it has been shown that most, if not all, enzymes work best in a comparatively narrow region of reaction. Consequently, in examining fluids for the presence of enzymes care must be taken to adjust the H-ion concentration to a value suitable for the particular enzyme. Neglect of this precaution has led to most confusing results in the past, especially in the case of amylase which occurs in normal urine and which is a measure of the activity of the pancreas.

The use of indicators and standard solutions is very

convenient in adjusting the reaction of enzyme substrates.

Maintenance of the Normal Reaction of the Body.—Tap water is more alkaline than blood, distilled water is more acid than blood. The difference, though slight from a chemical standpoint, is greater than the greatest variation met with in the reaction of the circulating body fluids. The essential processes of life run in very narrow channels; "a change in the reaction of the blood equivalent to the very slight difference between the reaction of tap water and distilled water would be fatal to the organism." (Hawk, 1919).

In spite of the continuous production of acids in the body, the blood maintains its normal reaction. This is due to the presence of chemical systems in the blood which are able to absorb acids without changing appreciably in reaction. These systems are sometimes termed "*buffer*" or "*regulator*" systems and they are met with in all living phenomena.

Buffer Systems:—A drop of 0.02 N. HCl added to a litre of pure water at 18°C. would cause a change in P_H from 7.07 to about 6. It is very hard to keep these pure solutions at constant reaction; they may take up a trace of carbon dioxide from the air or a trace of alkali from the glass vessel they are in, which would be sufficient to change the H-ion concentration from P_H 7 to P_H 6 or P_H 8.

If, however, the solutions contain salts of weak acids and bases they are much more stable as regards reactions.

Consider the effect of adding hydrochloric acid in small quantities or solutions of sodium acetate or sodium carbonate. The hydrochloric acid displaces the weaker acids and forms sodium chloride, the weaker acids which remain in the solution are less ionised than the hydrochloric acid and the H-ion concentration only changes slightly.

In preparing standard solutions for indicator work it

is customary to make them up from "buffer" mixtures, so that they keep their reaction for a long time unimpaired by the glass of the bottles in which they are contained.

The normal reaction of the blood is determined and maintained by means of these "buffer" systems, of which there are several :—

(1) Sodium bicarbonate and carbon dioxide.

(2) Acid mono-sodium hydrogen phosphate and alkaline disodium hydrogen phosphate.

(3) Organic compounds containing acidic and basic groups, such as the amino-acids.

The carbonates of the body are the first line of chemical defence. Stronger acids entering the blood displace the carbon dioxide which is eliminated by the lungs, while the stronger acid is converted into a neutral or nearly neutral salt and as such is excreted. In a recent paper Bayliss concludes that the chief and only function of the carbonates and bicarbonates of the blood is to regulate its reaction. (1919).

In a further communication I hope to describe a simple and rapid method of finding the reaction of physiological solutions by means of indicator papers.

NEURASTHENIA AND ALLIED CONDITIONS.*

By A. BALDIE, M.B. (Edin.).

THE aim of this short address is to discuss the subject of neurasthenia and its allied conditions in a way most likely to be helpful in dealing with the pensioners who suffer from these disorders. This purpose will probably be best served if the subject is considered under the headings :—Varieties and Causes, Diagnosis, Entitlement, Assessment and Treatment.

* Paper read to the Ministry of Pensions Medical Association, Ireland, (South) Region, on November 8, 1920.

A definition of neurasthenia is the first essential, for the word has been in the past most unfortunate in the interpretations to which it has been subjected. We shall define neurasthenia as a state of ill-health, the predominant or important feature of which is an abnormal mental and nervous reaction of the individual to his environment, in consequence of traumatic, pathological, or psychological influences. The advantage of this definition is that it is a guide to a simple division into three of varieties and causes of the condition.

(1) The first cause is organic disease in general. Any organic condition of the body by its debilitating effect will produce upon the nervous system a reaction which will find its expression in nervous symptoms varying according to the nature and extent of the organic disease causing them. Hence results one of the great difficulties confronting practitioners when dealing with pensioners. The disability in respect of which a man is pensionable may be largely obscured by nervous or mental symptoms, which in reality are but a consequence of the pensionable disability. This suggests two important considerations: (*a*) any such neurasthenia being a consequence of a pensionable disability will be governed by the same factors in regard to entitlement as was the original disability; (*b*) the diagnosis of neurasthenia should never be made in such cases by Boards, medical referees or others, so long as the causative disability thereof requires treatment. The cases here considered will of course include cases of trauma, such as gunshot wounds and fractures, especially of the skull, &c.

(2) The second and, in the case of soldiers, an important cause of neurasthenia is fatigue. The fatigue may be mental or physical or both in character. The fatigue in the case of a man who has served throughout the war as a private in or near the firing line may be mainly physical in character, although of course it is frequently associated with psychological influences as well: whereas fatigue in the case of officers is in the

main due to the prolonged mental strain and the heavy responsibilities continuously involved. In the case of many officers, of course, the physical fatigue involved in infantry and artillery work is also a factor. Most people are familiar with the state of mind produced by fatigue. The practitioner who has just completed a heavy round of twenty visits does not usually choose such a time to prepare his income tax return, nor will a novelist after twelve hours continuous exercise sit down easily to produce satisfactory work. Most persons are unpleasantly aware of the mental state which can be produced by enforced sleeplessness. Like an engine which is imperfectly oiled or has become overheated, the nervous system loses power and effectiveness.

(3) The third and probably the most important group is that of the psycho-neuroses, the causes of which are psychological in nature. The condition is now due not primarily to fatigue, but to psychological loss of balance, or conflict. We should be clear as to what is meant by psychological causes. In regard to the two former groups of causes the mental symptoms may be considered as the expression of physiological or pathological conditions dependent on more or less minute changes in the brain and circulatory system, themselves related to changes in the endocrinic glands and other organs. As pointed out by Bernard Hart in his small epitome of the subject, the psychological conception of disease on the contrary treats the mental phenomena as states of mind. It does not exclude the existence of organic changes in the brain and its auxiliary co-related organs, but it regards the state of mind as being the primary cause of any physical changes. To use again the analogy of a steam engine: the parts of the machine may be faultless, but if the machinery be run at too great a speed or if undue strain be placed upon its delicate mechanism, defects will follow, and the machine break down.

Once within the realm of psychology one is face to face with the criticism commonly brought against the modern

psycho-therapist, that his views are based entirely on theoretical and abstract propositions which are incapable of proof, and not upon any concrete foundation. To deal with this objection as it deserves would be a very lengthy task, but one would in passing recommend a perusal of the little volume by Bernard Hart[a] referred to above to those who are inclined to dispute the usefulness of psycho-analysis and psycho-therapy. As he points out, the usefulness of Dalton's atomic theory is in no way impaired by the fact that the discoverer of the theory not only constructed a scientific law but that he also invented the objects, namely atoms, in respect of which the law is conceived to hold.

Any student of modern sociology must perceive that perhaps the majority of cases of neurasthenia in civilians are in reality psychological in origin.

The first duty of the physician and of the neurologist is to classify his neurasthenics in such a way that his group of psycho-neurotics will include only those cases in which psychological origin of the illness is manifest. The symptoms in this group will, of course, be varied in their nature and extent. They may range from the mild feeling of tension, irritability and despondency exhibited in a state of mild neurasthenia, to which most normal persons are at times subject, to the violent manifestations observed in mania; there may be a psychical paralysis of action as in hysteria and stupor and in certain types of dementia præcox, or there may be increased activity, emotional and otherwise. Memory may be impaired either through the interference with the conscious personality of imperfectly repressed memories; or through disorganisation otherwise of the perceptual faculty, or of the capacity to register perceived objects. Where the amnesia is due to repression previous registration in the brain is demonstrated by the facility with which the repressed memories emerge in the form of dreams or under hypnosis.

[a] Psychology of Insanity.

Again, the prominent feature of the case may be not loss of memory but depression, phobias, delusions, hallucinations, "peculiar fancies," "fears of going mad," &c.

The origin of these abnormal conditions of mind can invariably be traced by the method known as psycho-analysis. Without here entering into a detailed discussion of this method of treatment it may be said that the greatest argument in favour of psycho-therapy lies in the marked improvement which follows its application to suitable patients, who—a very necessary condition—are sufficiently intelligent to be able to appreciate the idea of mind analysis.

The principal neurosis met amongst pensioners is that which has been labelled anxiety neurosis. The type is a very common one amongst civilian patients as well, but in regard to pensioners with long service who have served under actual war conditions at the front, the clinical picture is more definite and the condition easier of recognition. The factors underlying the neurosis need not necessarily be of a "horrible" or sanguinary nature. The strain to which the patient has been subjected, the long continued effect of which he is now suffering, may range from the effects of continuous shell fire to that involved in the mere separation, under war conditions, from his relations. The commonest causes perhaps may be included under the following headings :—

(1) Actual fear caused by the imminence of danger.

(2) The continuous mental conflict between the sense of danger and the desire for flight on the one hand and the sense of duty on the other.

(3) The so called authority complex. There is no doubt that the methods of control peculiar to military discipline proved damaging to a large number of individuals, who by reason of temperament, character or education misinterpreted the idea of military discipline or failed to adapt themselves to it. In such persons

their whole military career involved a strain of unnaturally forced acceptance of, or conflict with, military authority.

(4) Social and domestic troubles, which need no description.

In all these cases there are objective phenomena such as D.A.H. dyspnœa, &c. The D.A.H. is usually associated with low blood pressure: other signs are the usual tremors: from fine to coarse, localised or general; increased response to reflex stimuli; and, if the case become one of hysteria, there may be a neuro-mimesis of any or all the diseases known to man.

It is obvious in considering the effect of war strain on the individual mind that factors such as imagination, idealism, religious fervour, &c., are no less important than the actual fears and dangers to which a man has been subjected, in so far as they may sustain the conflict which is the source of man's troubles. The brave man is not he who is unconscious of danger, but he who realising danger controls his natural fear. There are many instances where this long continued and often excessive control of natural fear has produced disastrous results to a man's mental condition, particularly where his nervous predisposition is neurotic or hyperæsthetic.

Treatment.—The present facilities for treatment of neurasthenics in this region are unfortunately limited and inadequate. An ideal system for dealing with neurasthenics involves:

(a) A large hospital equipped *with laboratory facilities* for—

(1) Cases which are completely incapacitated and require institutional treatment, whether by psychotherapy, treatment training, or both.

(2) For the efficient diagnosis and classification of the large number of neurasthenics whose neurasthenia is due to organic disease which requires and would be amenable to treatment. It may be said that this is the function of a general hospital. It is. But we have to

recognise, nevertheless, that a considerable proportion of neurasthenics ultimately reach the neurologist.

(3) Men who are not completely incapacitated but for whom psycho-therapy or re-education in workshops, gymnasia, &s., is indicated.

(*b*) The psycho-therapy clinic for the consideration of all cases recommended treatment by Medical Boards or referred to Commissioner of Medical Services by Local War Pensions Committees. Duties of a Clinic Medical Officer *should* be :

(1) To decide as to a man's suitability for special neurological treatment.

(2) To estimate the loss of remunerative capacity in respect of the treatment required, which is of course not to say that a man is physically incapacitated because treatment interferes with his work.

(3) To submit for sanction of Commissioner of Medical Services recommendations for treatment allowances for men whom he considers, on the ground of treatment required, should not work.

(4) The division of men suitable for treatment into hospital and clinic cases.

(5) In regard to men recommended for admission to hospital to ensure that as much information about the case as possible is transmitted to the hospital in order that the necessary diagnosis and treatment there may be facilitated.

(6) To provide treatment at the clinic for men who are able to work, and of whom it may be said that work will not interfere with their treatment.

The functions of the Clinic Officer, therefore, will be seen to be as varied as they are important. One is not hopeful of dealing satisfactorily with the present large list of men awaiting treatment until this first essential, namely, a psycho-therapy clinic properly staffed is at work.

Even when the clinic is partially established, as it is hoped it soon will be, actual treatment of pensioners

by this method will be far from satisfactory until the staffing is considerably increased. Until this is done it seems inevitable that most of the time of the Clinic Medical Officer will be occupied on diagnosis, sorting out cases, and in making recommendations for treatment allowances. To put it at the very lowest, this is a waste of money. To put the point of view of the physician it is depressing and deplorable that these men should be allowed for want of treatment to get steadily worse.

(*c*) The one remedy at present, home treatment, is undesirable in the majority of cases on several grounds. A patient who requires a rest and isolation is not likely to obtain these at home. Where the indications are re-education by means of occupation and recreation, &c., which depends for their success upon an application of the principles of herd-psychology, home treatment is even less likely to be of advantage. Where a true psychoneurotic is already under the baneful influence of the medicine bottle it may be positively harmful. In a few cases, however, especially if for any reason other treatment may be difficult of application, home treatment may be sanctioned.

Entitlement and Assessment.—The subject of entitlement and assessment deserves an essay by itself. The fact that symptoms have frequently been entirely subjective, coupled with the apparently natural tendency for military judgment in regard to these unfortunate patients to run to the extremes of sentimental pity on the one hand, and of an ill concealed suspicion and impatience on the other, suggests the necessity for a very careful sifting of the evidence contained in his military documents. The most important of these, apart from his medical history sheet, are the B. 103 active service casualty form and the man's conduct sheet. On these documents will be found, as a rule, plenty of clues as to whether the man was originally of a neurotic or mentally defective type, or whether he has developed his symptoms as a result of service.

Numerous entries on a man's conduct sheet do not necessarily mean that he has been a bad soldier or is not pensionable: if these entries are preceded by, say, two years of active service during which no military crime has been established, is it fair then to assume that the entries were the result of a man's nervous break-down and a consequence of the strain of service. Similarly the question of alcoholism has to be considered in relation to a man's record, length and nature of service. Alcoholism following great mental and physical exhaustion, head injury, concussion, sunstroke, debilitating illness or fever resulting from war service will not disentitle a man. Scientifically it is probably true in all cases that alcoholism and crime of the futile and senseless kind very often revealed in military documents, are symptoms of disease, and not disease in themselves; but true as this may be theoretically, it has to be modified according to the other factors connected with a man's service. Entitlement in insanity, generally speaking, is determined in the same way. Any man discharged with insanity is *primâ facie* pensionable, but this has to be qualified. Though one attack of insanity prior to enlistment will not necessarily mean that the insanity arising on active service was not attributable thereto or aggravated thereby, a history of two or more attacks occurring before enlistment in the case of a man with short home service would suggest that an attack occurring during the war or thereafter had no relation to his military service. Congenital feeble-mindedness of moderate degree does not necessarily disentitle a man, in the event of subsequent mental disorder developing on or shortly after service.

Epilepsy.—Probably all so-called idiopathic epilepsy is of constitutional origin; in most cases (excepting those with very short home service) aggravation may be conceded. But difficulty arises from the fact that probably 30 per cent. of the cases so diagnosed idiopathic are in reality hystero-epileptics whose neurosis is directly

attributable to military service. The necessity is obvious for proper institutional facilities for observation as well as treatment.

Insanity following syphilis does not mean that the man is not pensionable, provided there is no evidence of cerebral affection on enlistment. Here again nature and length of service are of importance.

There is a certain difficulty in entering the opinion that an aggravation has passed away upon which discussion may be of use. In dealing with conditions such as neurasthenia a patient's symptoms fluctuate erratically in degree, and though a man's appearance and condition may offer convincing evidence that he has improved, he may within a very short time regress to his previous state. Hence, the difficulty of forming an opinion that aggravation has passed.

In view of the commonly accepted idea of the hereditary origin of insanity, the practice of the Ministry may be said to err, if anything, on the side of generosity in matters of entitlement connected therewith.

Assessment.—Sheer physical incapacity or actual time lost are not satisfactory criteria in regard to assessments in these cases. A man though able to work may be at a constant disadvantage through self-consciousness and lack of confidence, as in cases of so-called "authority complex neurosis" or his subjective symptoms, *e.g.*, headaches, phobias, tremors, stammering, may seriously impair his wage-earning capacity. Per contra there is no reason why an epileptic having less than one fit a month with no other disability should be highly assessed —5 per cent. to 10 per cent. is probably a generous assessment in most of these cases. In all epileptics the nature of the man's work should be considered in relation to the periodicity, nature and length of fits.

A few observations on medical legal aspects suggested by the present day views regarding the psycho-neuroses may not be amiss. Insanity after all is a purely legal conception. We have to recognise that what to, the

medical man is out and out insanity, may strike the lawyer as indicating merely a mild state of neurasthenia and a double dose of original sin to be corrected by legal penalties. The law rightly perhaps is interested not so much in a medical opinion as to the responsibility of a man as in the reasons upon which this opinion is based. It is desirable, therefore, that when asked to express an opinion upon responsibility, the reasons for such an opinion should be clearly stated. Three criteria of responsibility may be suggested as likely to appeal to the legal mind :—(*a*) Does the man appreciate the fact of the commission of the act with which he is charged? Acts committed in state of somnabulism or of epileptic mania are committed, of course, independently of the conscious volition of the patient. (*b*) Does the man appreciate the nature and consequences of the act with which he is charged? The idiot and the moral imbecile and to no less an extent certain types of psycho-neurotics do demonstrably fail to appreciate the nature and consequences of many of their actions, and in regard to the neurasthenic it may be stated this failure is more likely to be accentuated than diminished by punishment. (*c*) Is the man suffering from any state of mind which in normal individuals would be legally accepted as entitling the patient to the consideration accorded on account of provocation or extenuating circumstances? That is to say, is the man suffering from established delusions or hallucinations?

In conclusion, those of us who are engaged in the care of these cases should consider ourselves fortunate in being amongst the pioneers of a new and promising field in medicine. We are concerned with patients amongst whom are what may be not unfairly described as the scum and debris of medical practice. Most of our patients are those whom the profession have not failed, but had not the necessary time and opportunity to cure. The number of these patients is large; the prognosis in regard to the "functional-" and psycho-neuroses is good.

The work is modern, and we have hardly touched the fringe of a field which is full of promise to us professionally and to medicine and the State. Far from being daunted or discouraged, therefore, by our patients' medical histories, we should, I would suggest, seize the opportunity to offer convincing proof, namely, by results, that our subject is in every way one of fruitfulness and promise.

SOME OBSERVATIONS ON THE PROPHYLAXIS OF MALARIA.

By W. B. WALKER, M.D. (Univ. Dub.).

It is not my intention to deal with such anti-malarial measures as the drainage and filling in of swamps, or the planting of so-called anti-mosquital shrubs. I wish rather to give the outline of how a white person, devoid of the resources of a Public Health Department, may live in a malarious country in comparative safety.

I am unable to give official casualty figures due to malaria in this campaign, but if stated at 80 per cent. of the total there is little fear of exaggeration, whilst one may safely conclude that not more than one in twenty escaped in contracting the disease at one time or other. Taking admissions into hospital into consideration, these, in the course of a month, often reached the high figure of 50 per cent. of the white forces engaged.

At Kilwa, in German East Africa, my morning sick parade consisted of half of the entire company, so it is obvious that had all these been admitted to hospital forthwith the whole unit would have been *hors de combat* in a very short time.

I propose to deal with my subject under three headings :

(*a*) Medicinal.

(*b*) Prophylaxis proper or the protection against infection by the plasmodium.

(*c*) The problem of relapses.

(a) *Medicinal Prophylaxis.*

When sickness from malaria reached an unprecedented height it was urged, as has often been done before under similar circumstances in other places, that prophylactic doses of quinine should be served out to all the men. The doses recommended and given were quinine gr. x. and gr. xv. on two successive days in each week as advised by Koch.

The effect of this was carefully observed and I was able to conclude definitely that although the sick list diminished for a day or two, yet towards the end of the week, or shortly prior to the time when the next doses were due, the list showed as high a total as ever.

The idea underlying this form of treatment is, that if a man becomes infected, the incubation period being taken as ten days, then two such doses of quinine should check the development of the parasite. How much this hypothesis is founded on fact may be gathered from what I have already stated; such experience as mine I believe is by no means unique. After one month's trial of this course I decided to discontinue it. Quinine gr. x. and gr. xv. twice weekly, on Wednesdays and Saturdays, was then tried. The results were no better than before.

My next attempt was to try the drug in the manner recommended by Ross, namely, daily doses of gr. v., with gr. x. on Sundays. As regards the incidence of the disease, my results showed no appreciable difference. I had reason for thinking, however, that the method was not without some advantage, because the number of cases showing hyper-pyrexia was certainly diminished; this however, might only have been co-incidence.

On the whole it must be concluded that quinine as a prophylactic is a failure for those who have to undergo continual exposure to the risk of infection. I believe that this is the conclusion come to by the majority of medical men who have had experience of dealing with the disease on a large scale. When one considers the brilliant

results obtained by the use of the drug in the treatment of the actual disease it is only natural to wonder why quinine should fail as a prophylactic.

(*b*) *The Use of Nets.*

By this time it became imperative that other methods should be tried. The men were still kept on daily doses of quinine—gr. v., but looking back, and judging now from my experience, I do not know why, I can only surmise that, like the Athenians when they erected a temple to the unknown god, it was because of fear that if quinine were not used greater calamity might possibly fall upon us.

As long ago as 1900 Drs. Sambon and Low, in their now classical experiment, showed that it was possible to live in perfect health in the hitherto deadly Roman Campagna. They lived in this highly malarious district during the most malarious season of the year with no other protection than mosquito-proof netting, which was used only at night. Bearing this in mind I was urged to give renewed and greater attention to the condition and proper use of the nets provided. They were subjected to the closest scrutiny; small ones were discarded for larger, and all were fitted with a bottom bordering of calico 18 inches deep. This was to enable a firmer tucking in of the net under the ground sheet and so lessen the risk of exposing any part of the body. Tropical nights are often of such a heat that it is by no means uncommon for the men to be exceedingly restless even when asleep. The result is that the throwing about of the limbs often causes parts of the body to become exposed with disastrous consequences. The larger and more roomy nets, as above described reduced this risk to a minimum, and, I have no doubt, played a great part towards attaining the results to be mentioned later.

Before the 5.30 parade beds had to be made down and the nets tucked in position under the mattress or ground sheet. It is absolute folly to fix the net after sunset. If

careful watch is not kept this is often done, and I have noticed that officers are not the least offenders in this respect. The mosquito only comes out from her lurking places to feed about sunset and is extremely regular in her habits. The man, therefore, who fixes or has fixed his bed just before getting into it almost invariably takes a small company with him.

At 5.30 parade all men had to appear dressed in slacks and puttees, with tunics or shirts buttoned at the neck or wrists. The regulation short khaki slacks of the daytime were forbidden to be worn at night. By these means the amount of skin surface exposed to the anopheles was reduced to a minimum.

Camp sanitation was given the strictest attention, all grass for a distance of 200 yards was cut away and burned. Empty tins were collected and buried. Small pools of water were drained away, and where this was not possible kerosene spraying was regularly carried out. Vessels for drinking water were kept covered with good fitting lids. It was a crime against those responsible if useless collections of water were left or splashed about the cook houses or other such places. Vegetable refuse and garbage was carefully collected and incinerated or buried, because there is no doubt that in the absence of a human host the mosquitoes will feed upon such stuff.

The collection and disposal of discarded tins, which very often gather about a camp, was, in my opinion, an important measure. The female anopheles avoids the light; she much prefers to lurk and breed in dark, secluded corners, so that undoubtedly discarded tins or jam jars containing a little rain water, especially if lying more or less covered by grass, form admirable breeding grounds.

(c) The Problem of Relapses.

I now come to my third heading, namely, the methods of dealing with relapses. Relapse, no doubt, is the rule rather than the exception: in fact, I do not recollect ever seeing a case that had never had a relapse. A history of

fever without a relapse at a subsequent period would, to my mind, argue strongly against the case being one of malaria.

Castellani and Chalmers state that "malaria is one of those infectious diseases in which a relapse may be considered as an essential feature." Gordon Ward relates how a distinguished consulting physician on going round his special malaria wards in France said to the men: "You will all be free of malaria next year." One patient had already had the disease for ten years. The after treatment of malaria is, therefore, a most important matter.

All parties when discharged as fit for duty were kept on daily doses of quinine gr. xx. for one month. For two succeeding months the dose was gr. x. daily; after this they were given gr. v. daily for the remainder of their stay with the unit.

I am convinced from my personal experience at any rate, that a potent cause of relapse was exposure for too long a period to the actinic rays of the sun. When I had been careless about my head covering the truth of this was forcibly brought home to me.

All sun helmets were carefully and regularly inspected. Those with broken crowns were condemned as being unfit for further use. Spinal pads were worn on all occasions during the day. Between 11 a.m. and 3 p.m. the men were kept under sun-proof or double-fly tents, or failing this, under a grass-roofed shelter.

On more than one occasion after a long journey in a hoodless motor car I was seized with a definite rigor on the next day. I attributed this to the effect of the sun's actinic rays. To remedy this improvised hoods were attached to all cars which had not already got them. Long journeys now did not result in an attack.

The question of diet was also considered. During the earlier period of the campaign rations consisted of tinned beef, biscuit, tea, sugar, and occasionally jam. The average white in the tropics can for a few weeks subsist in fair health on this ration, but not for much longer.

Such a diet, however, is poor stuff for a sick man to recuperate on; consequently if continued in his case his condition rapidly deteriorates.

Special permission was, therefore, obtained for the supply of medical comforts, as rice, sago, oatmeal and butter. The result of this was that a more rapid improvement soon showed itself in the chronically debilitated. Frequently recurring cases with associated anæmia were also put on iron and arsenic mixture with distinct advantage.

The effects of these methods of dealing with the cases became very apparent to me when I compared and contrasted those coming under my observation during my last six months with those of earlier periods. The men no longer looked thin and haggard; their blood condition was also much more satisfactory, at any rate judging from their faces and conjunctivæ. Distinct and progressive gain in weight was also manifest.

Many old residents in the tropics are believers in alcohol; some, indeed, will go as far as to say that they had few if any attacks of malaria since they began to take it. How far the merits of individual cases will warrant this I am not prepared to say, because there are many other facts which must be taken into account when one studies the question. Of this I am convinced, that alcohol is not a prophylactic against malaria. It gives a false sense of security, and again, the habit is much more easily set up in the tropics than it is in temperate countries. This is probably because of the temporary exhilaration it produces under the depressing climatic conditions, and over-indulgence is thus extremely apt to occur, which in the tropics is only too well known.

Regular exercise in the morning or evening should be indulged in. Too often does a man become attacked with ague when he has drifted into that lazy state which a European is very apt to acquire in hot countries. Repeated stimulation of the jaded appetite and a lazy life are potent, predisposing causes of malaria.

One other practical point to which I want to draw

attention is that serious consideration should always be given to those who report sick with boils, blisters, and abrasions and such like. Only those who have had to march in the tropics when afflicted with any of these know the horrible torture that these conditions may produce. Apart from this, malarial attacks are exceedingly apt to occur in such persons.

The result of the methods just described being adopted was to decrease a sick list to 6 per cent. as compared to 50 per cent. in the previous year. Of course I am aware that periodic decreases in the incidence of malaria often occur from year to year. I venture to state, however, that this did not account for the decrease mentioned. I believe that this was due to correct measures being adopted.

REVIEWS.

Cunningham's Manual of Practical Anatomy. Vol. II., Thorax and Abdomen, pp. xxx + 524; Vol. III., Head and Neck, pp. xxx + 568. 7th Edition. Revised by Arthur Robinson. Henry Frowde and Hodder & Stoughton. Price 12s. 6d. per volume.

We have merely to record the appearance of a new edition of the "Manual": its place is already firmly and deservedly established in the fore-front of its kind. The text has been revised by Professor Arthur Robinson, and new figures have been added necessitating (unfortunately, we think) the publication of three volumes instead of the original two. The instructions for dissection are now printed in a distinctive indented type which is pleasant to the eye.

If further illustrations must be added we hope they will have that quality of simplicity, seen, for example, in Keith's "Embryology," which makes the most inexpert draughtsman feel that he can reproduce with his own pencil the complexities of a "part."

Tropical Ophthalmology. By R. H. Elliott, F.R.C.S. London: Henry Frowde, Hodder & Stoughton, Oxford University Press. 1920. Pp. xxiii + 525.

This book, the first of its kind, comes as a valuable addition to the literature of Tropical Medicine, and can be warmly recommended to the workers in that field.

As stated in the preface, it is not intended to be a comprehensive text-book of ophthalmology, but rather a monograph on this special branch.

The attractive style renders the book most readable, while the numerous and excellent photographs and drawings, together with the extensive bibliography, greatly enhance its scientific value.

The author's obvious enthusiasm and the well-known use he has made of his vast experience, will assuredly stimulate others "on the spot" to observe and record.

Ophthalmic Operations. By Harold Grimsdale and Elmore Brewerton. 2nd Edition. Figures in Text 129. London: Baillière, Tindall & Cox. Pp. viii + 438. Price, 18s. net.

In the second edition of this book the authors have presented to the profession a really readable work on the operative surgery of the eye, written with clearness and precision. It admirably maintains the purpose for which it was originally intended—namely, that of being a convenient guide to ophthalmic operations, giving the chief ways in which the various problems of ophthalmic surgery have been attacked, and leaving the surgeon to adapt some particular one to his requirements.

Description alone in a work such as this would be insufficient, and the text has accordingly been enriched by numerous diagrams, which are very clear, though we do not understand why they have been so crudely executed.

Extraction of cataract, of course, bulks largely in ophthalmic surgery, and a large amount of space is devoted to the description of the exact site and size of the incision. We think more stress should have been laid on the exact method of making the incision, and especially upon the importance of continuing the motion of the knife without pause until after the counter puncture has been made. This, we think, prevents the premature escape of the aqueous and the difficulties consequent upon it.

A chapter might have been introduced dealing with the duties of the assistant and the various methods of local anæsthesia as applied to the eye.

We can thoroughly recommend this excellent book to all students of ophthalmology. R. H. M.

Medical Handbook. By R. S. Aitchison, M.D. Sixth Edition. 1920. Griffin & Co. Pp. xvi + 390.

This work, now in its sixth edition, aims at supplying a condensed account of practical medicine, and contains many useful hints from the author's own experience. In the attempt to keep the work within certain limits the text has become rather overcrowded. Its long career of twenty-seven years is a sufficient testimony to the demand it has created.

Infectious Diseases: A Practical Text-Book. By Claude Buchanan Ker. Oxford Medical Publications. Second Edition. London: Henry Frowde and Hodder & Stoughton. 1920. Pp. xii + 627.

It is more than ten years since the first appearance of Dr. Claude B. Ker's text-book, and it has made its position as the leading modern book on fevers written in English. The second edition shows evidence of careful revision, and the illustrations are not only beautifully produced but are truly informative. Dr. Ker makes no pretence of presenting an exhaustive text-book. He does what is more helpful in giving us "a record of personal experience." He restricts his discussions to twelve diseases with which his work at the Edinburgh City Hospital has made him thoroughly familiar, and he omits not only some of the rare infective diseases, but

such a disease as trench fever, with which so many of the profession made acquaintance during the war. While the subject is viewed chiefly from the clinical side, the paragraphs on pathology and bacteriology are clear and adequate. Dr. Ker arranges his subject in an orderly manner, and his style has the distinction and clarity which seems to come more naturally to writers from the north of the Tweed than to Londoners. The book is invaluable to those whose work brings them into frequent contact with fevers, and we recommend it as a safe guide to all physicians and practitioners.

Wheeler's Handbook of Medicine. By W. R. Jack. Sixth Edition. Edinburgh: E. & S. Livingstone. 1920. Pp. xv + 561.

First published twenty-six years ago Wheeler's Handbook of Medicine reaches a sixth edition with the present publication. This work, so popular with students making up their work for examinations, has not materially altered since the last edition. A few pages have been added on medical diseases of the war, and there have been a few slight rearrangements and extension of some of the articles. As before it is concise and up-to-date, and doubtless will continue in demand.

Clinical Ophthalmology. By A. Maitland Ramsay, M.D. London: Henry Frowde and Hodder & Stoughton. 1920. Pp. xx + 500.

We warmly welcome this addition to medical literature. While many excellent text-books on ophthalmology already exist, this is the first important attempt to deal

with the subject from the point of view of the general practitioner.

Dr. Ramsay, having been in geeral practice for several years, is peculiarly well fitted for the task; he writes with the sympathetic understanding born of personal experience.

The author's classification is based on the symptomatology of ocular disorders, an essential method in such a work. His explanations are always clear and concise; his advice eminently practical and never dogmatic.

The value of the text is enhanced by excellent photographs and drawings, by a detailed appendix on therapeutics, and an interesting glossary.

Treatment of the Neuroses. By Ernest Jones. London: Baillière, Tindall & Cox. 1920. Pp. viii + 233.

This is an admirable exposition of the various methods of treatment of the neuroses. It compares and contrasts these methods fairly and frankly. While it deals principally with treatment there is a great deal of valuable information on the pathology and symptomatology of these conditions. The chapter on Hysteria especially is very full and complete.

Altogether the book is a thorough and up-to-date review of the treatment of the different neuroses.

ABSTRACTS OF CURRENT LITERATURE.

SURGERY.

GENERAL SURGERY.

KREUTER: *Etiology and pathology of Osteochondritis deformans juvenilis coxæ (Perthe's disease).* "Ztblt. f. Chir." No. 38. 1920. P. 1162.

WIDE differences of opinion as to the true nature of this puzzling clinical condition have been expressed in German surgical literature, mainly owing to the fact that so little material has been available for histological examination. Perthes and Frangenheim [a] alone have had such opportunity. They have described the condition as being a primary retrogressive change in the upper femoral epiphysis, due to nutritional disturbance the result of injury to the nutrient vessels. Such changes as they observed were purely "subchondral," the articular cartilaginous covering of the epiphysis remaining intact, in their view. This is a quite separate clinical entity from a true arthritis deformans. Pommer, on the other hand, maintains that these cases in the child are in reality the initial manifestation of true arthritis deformans of later life.

Kreuter has recently obtained a *post-mortem* specimen from a young girl of nine years, in whom the condition was bilateral. Both femoral heads showed the usual flattening of the epiphysis: but there was a definite alteration from the normal in the articular cartilage not alone of the femoral heads, but of both acetabular cavities. (Fissured clefts, depressions, and exfoliation of cartilage.) As a result of histological examination, Kreuter and Pommer conclude that osteochondritis deformans and arthritis deformans are essentially the same lesion. (Pommer's histological investigations of this case are shortly to be published in the Archiv. f. Klin. Chirurgie.)

WM. DOOLIN.

[a] Frangenheim's paper was abstracted in our issue of September last.

DEHLER. *Surgical Treatment of Chronic Gastric Ulcer.* Zblbl f. Chir. 35. 1076. 1920.

RESECTION of the ulcer-bearing area of the stomach is recommended in all cases where it is possible. As the operation is an extensive one, in weak patients operative risk is diminished by a two-stage operation: a high posterior gastroenterostomy is carried out first, followed by a resection of the pyloric half, days or weeks later. In ulcers in the cardiac area, the gastroenterostomy opening is placed in as close proximity to the ulcer as possible, to bring the alkaline duodenal fluids into intimate contact with the ulcer; the pylorus is closed at the same time.

WM. DOOLIN.

HABERER, H. v.: *Surgical Complications of Influenza.* "Mitteilungen a. d. Gzgbtn. d. Med. u. Chir." xxxii. 1. 1920.

DURING the course of the recent influenzal epidemic, von Haberer had many interesting surgical observations under his notice. The most frequent surgical complication was empyema, which usually set in as a direct continuation of the original attack. During the course of several influenzal pneumonias a distinct form of appendicitis was recognised; no case was submitted to operation, all recovering. In three cases, however, shortly after their influenza convalescence, a severe attack of recurrent appendicitis ensued, all healing well after operation. A catarrhal cholecystitis was also observed, with pyrexia and very persistent jaundice: recovery ensued without operation. Occipital neuritis, prostatitis, and epididymitis were also met with. Abscesses of the soft tissues were frequent, but healed easily on evacuation.

In many instances an influenzal thyroiditis occurred (Grippestrumitis) necessitating incision. In other cases the appearance of a toxic goitre was first dated by the patient from the influenzal attack. On four occasions a noteworthy surgical risk was manifested: here, operation undertaken at a distant period from the original influenzal attack led to the reappearance of a very dangerous pyæmic form of influenzal onset, where the operation wound underwent serious suppuration: of these four cases, all thyroidectomies, three died. v. Haberer concludes, from his own experience, that in patients who have suffered from influenza, surgical operations, undertaken at even long periods following

upon convalescence, may lead to the mobilization in their system of latent micro-organisms, producing a severe pyæmic form of general infection, which may be fatal. The very serious course such cases run stands out in sharp contrast with the favourable results which were observed in the simpler metastatic types of suppuration met with during the influenzal attack .

Wm. Doolin.

Gehrels: *Surgical Tuberculosis of the Mesenteric Lymph-glands.* "Ergebn. d. Chir. u. Orth." xii. 1920.

Under this title is described a primary lesion, without affection of intestine or peritoneum. Either type of bacillus, human or bovine, may be the exciting cause. Two clinical forms may be distinguished, a localised process, characterised by tumour formation, of relatively good prognosis, and a diffuse form, with rapid caseation and suppuration: both forms may overlap. The ileocæcal angle is the most common site of origin, from which infection may spread, leading to a tuberculous peritonitis. Pathologically, such glands manifest the usual changes, hyperplasia, caseation, cold abscess formation, and occasionally calcification. The disease appears to be more common than is generally recognised, particularly in boys under 15 years of age.

The clinical picture varies: the chronic form is adhesive in type, with indefinite digestive disturbance and lowered vitality: the acute form (which may supervene on the chronic) is characterised by a sharp peritoneal reaction, usually the result of rupture of an infected gland: ileus may be a complication. The predominant subjective sign is pain, less commonly wasting. The pain occurs intermittently, usually to the right of the umbilicus, and is not very characteristic: it may simulate that of any of the well-known abdominal lesions. Functional intestinal disturbance (e.g., spasmodic constipation or diarrhœa), progressive loss of flesh, and pronounced secondary anæmia are constant phenomena, as is also intermittent pyrexia: vomiting is rare, and when present, usually signifies the onset of complications. Even in the acute phase, uncomplicated cases rarely manifest abdominal distention or rigidity. Tumour formation is distinctive and rarely absent, though difficult of perception in the diffuse form: such masses are moderately mobile: fixed posteriorly and tender to touch. Tenderness on pressure is often present without tumour, central in position, corresponding to the root of the mesentery: *x*-ray investigation and rectal examination are of diagnostic assistance: the blood picture and tuberculin tests give but little information. The disease is

frequently latent in type, with a marked tendency to spontaneous cure.

As a general rule it is for the complications rather than for the original lesion that the patient is referred to the surgeon. Owing to the alleged infrequency of the disease, lack of recognition is frequent, the most usual error in diagnosis being that of appendicitis, in either the acute or chronic form; in the acute type of mesenteric tuberculosis (rupture of a caseous gland) the initial vomiting and rigidity of appendicitis are absent. From the chronic appendix differentiation is more difficult; here the pain and tenderness are more mesial in the mesenteric lesion. Further sources of difficulty in differential diagnosis are to be met with in tumours, mesenteric cysts, and tuberculous peritonitis. On radiologic examination calcified glands may be mistaken for renal calculi.

Enlarged mesenteric glands are frequently found during laparotomy in children; the tuberculous gland may be recognised by its tendency to adhesion formation and the absence of signs of acute inflammation.

Uncomplicated glandular tuberculosis is of good prognosis, and treatment is usually conservative in type (fattening diet, inunctions, *x*-ray, &c.). Failure of medical treatment, persistent pyrexia, or continued growth in the tumour, are the main indications for early surgical intervention. During operation, avoidance of injury to mesenteric vessels may need care: the operative prognosis is good.

Wm. Doolin.

SURGERY OF THE CHEST.

Evarts A. Graham: *Importance of Vital Capacity in Thoracic Surgery.* "Jour. Amer. Med. Assoc." Oct. 9, 1920.

The author points out that the usually accepted figure for the vital capacity of the chest is underestimated, and that the average for a man of 5 feet 8½ inches to 6 feet is 4,800 c.cms. instead of 3,500. A patient's vital capacity affords a fairly accurate index of the individual's ability to compensate for any encroachment on his breathing surface. The author goes very fully into the results of experiments on the mechanism of open pneumothorax; these were chiefly performed on the dog, and went to show that the thorax should be looked upon as a single cavity rather than as a double, and that if air were pumped into one pleural cavity till there was a positive pressure of 10 cm. of water the pressure in the other would rise to 9 cm. or 9.5 cms.

The natural conclusion is that when one pleura is freely opened and the lung collapses, there is an almost complete collapse of the other side. He produces a simple mathematical formula from which it is possible to decide the maximum size of opening that can be made in the chest which will not prove fatal as long as the patient's respiratory muscles are able to maintain a maximum effort. This proves for a normal man to be about 10 square inches. This is interesting, but vitiated by the fact that the chest of dogs and men differ in a very important point. The transverse diameter of the chest of a human being is twice that of the antero-posterior, whereas that of a dog is only half as much, and the area of the diaphragm as compared with the transverse diameter of the chest is very different. The lateral motion of the mediastinum in the human being is therefore very much less in proportion to the width of the pleural cavity than in the case of the dog. As a result, free opening of one side of the chest in the human being will have a much less serious effect on the vital capacity than is shown in the experiments on dogs. The author, of course, admits that where the pleural cavity is partially obliterated by adhesions, or where long continued inflammation has caused a thickening of the mediastinal pleura, the conditions are quite changed, and the two pleural cavities become largely, if not entirely, independent.

His conclusions are that in empyema the vital capacity is largely reduced; this depends not merely on the presence of fluid exudate in one pleural cavity, and is, therefore, an argument against the establishment of open drainage during the acute pneumonic stage of an empyema, when the vital capacity is so low as to approximate the total air requirement. Extensive thoraco-plastic operations result in a marked reduction of the vital capacity, and should, therefore, be employed only in the rarest instances, and only after other methods have been given an intelligent trial for many months.

R. A. Stoney.

Eggers, Carl: *Relative Value of various operative procedures employed in Acute Empyema.* "Jour. Amer. Med. Assoc." Oct. 9, 1920.

The author states that during the last few years the two most important points recognised in connection with empyema are: (1) A general recognition of the importance of an acute pneumothorax. (2) The systematic attempts at sterilization of the empyema cavity by means of chemical solutions. He considers that individualisation is the key-note of the treatment of cases

of empyema. In the ordinary type of empyema following pneumonia he advises intercostal incision or rib resection in the eighth or ninth space, and open drainage, with or without irrigations with Dakin's solution. In cases of streptococcus and staphylococcus infection, with the presence of a large quantity of septic fluid, he recommends frequent aspiration in the early stage or closed drainage; in the later stages open drainage and irrigations. Suction should never be employed while the inflammation in the lung is active. The only safe healing for an empyema is obliteration of the cavity. When pus is present the oldest rule of surgery should be followed and it should be given free exit.

R. A. Stoney.

Ochsner and Crile: *Clinical Consideration of Osteomyelitis.* "Surg. Gyn. and Obstet." Sept., 1920.

The authors explain that the conception of the true nature of bone is a deposit of organised mineral salt between the spaces of a finely branched system of blood vessels. This consideration helps in the understanding of the results of the inflammatory process when it occurs in bone. When infection is carried by the blood stream to a bone the organisms find their first opportunity to rest at the point where they enter the interosseous circulation, that may be either directly beneath the periosteum or in the medulla, where the branches of the nutrient artery enter a blood space. In many cases there appears to be a simultaneous involvement of the subperiosteal region and the medulla.

Their conclusions are that an early and exact diagnosis followed by immediate surgical treatment is essential. The operation should consist in splitting the periosteum, for a distance of 2 to 5 cms. beyond the painful area in each direction, and the periosteum should be loosened from the bone for 1 or 2 cms. on either side of the incision. In the more severe cases this should be the full extent of the primary operation. In less severe cases, however, recovery may be hastened by making an opening into the medullary canal at the point of maximum tenderness. Hot, moist dressings, fixation and the use of electric light treatment increases the comfort and facilitates healing. They strongly deprecate removal of the shaft of a long bone before the formation of a good involucrum. In later cases or in secondary operations every particle of dead tissue should be freely removed, and a definite plan adopted to facilitate closing the defect. Complete closure by formation and sliding of long lateral

flaps is recommended, also Thiersch grafting after granulation has commenced. Attention should also be paid to foci of infection elsewhere in the body, such as tonsils, teeth or accessory sinuses.

R. A. Stoney.

RENAL SURGERY.

Marwedel: *Observations on Operation for Renal Calculus.* "Ztblt. f. Chir." 34. 1034. 1920.

During the past ten years pyelotomy has largely replaced nephrotomy as the procedure of choice for the removal of stones from the kidney. The latter procedure should be reserved to-day for cases in which, owing to adhesions, mobilization of the kidney is impracticable, for cases where large branched stones are present, and where, owing to well-marked infection, drainage of the renal cavity is required. The transverse nephrotomy (Querschnitt), introduced by the author in 1907 has a distinct value in certain cases, and the transverse division of kidney tissue is advisedly restricted to the anterior surface of that organ. Latterly, however, Marwedel has carried out pyelotomy almost exclusively; he advocates incision of the anterior surface of the pelvis rather than the posterior, for the reason that in cases of necessity the incision in the pelvis can easily be carried straight on out through the renal parenchyma (anterior pyelonephrotomy).

In simple pyelotomy, with only moderate infection, primary closure of the pelvis, without drainage, is quite safe: where, owing to more serious infection, drainage is necessary, the following procedure may be used with advantage:—After removal of the stone, a thin forceps is introduced through the pelvic wound, gently bored out through the renal tissue and cortex, where a thin rubber tube is seized, drawn through the kidney into the pelvis. The tube is fixed to the convex border of the kidney by a fine catgut stitch, to be withdrawn in 5-6 days: the pelvic wound is closed. By this manœuvre urine is prevented from stagnating in the pelvis, thus facilitating healing of the pelyotomy wound. No accident has followed this method of drainage.

Rehn has suggested that pyelotomy may be followed by an "operative rein mobile," and advocates stitching the kidney back into place, at the end of the pyelotomy. Marwedel does

not agree with Rehn's contention that direct fixation of the kidney is necessary; in infected cases the drainage tube "fixes" the kidney, and in aseptic cases, if the kidney has been correctly replaced in its old bed, it rapidly heals into position.

WM. DOOLIN.

CASPER: *Renal Tuberculosis.* "Ergebn. d. Chir. u. Orth." xii. 1920.

TUBERCULOSIS of the kidney is a common lesion, being found in 3-5 per cent. of all autopsy specimens. The infection is haematogenous, travelling from a primary focus elsewhere in the body, either lungs or lymph-glands, &c. A true primary infection of the kidney is extremely rare: an ascending infection of the kidney from a severely infected bladder is possible, but exceptional. Although gross trauma seems to play no rôle in the ætiology, Casper is of the opinion that microscopical vascular lesions (infarction) are responsible for the ultimate deposition of tubercle bacilli in renal tissue.

Pathologically he distinguishes two types: acute miliary, and chronic ulcero-caseating: in rare cases a chronic miliary form occurs. The chronic process may remain exclusively confined to one pole of the kidney. The ureter and surrounding tissues usually are involved in the infection process.

Diagnosis is frequently missed, as the symptoms are often slight in proportion to the amount of anatomical change present. The general condition of the patient is often quite good; the earliest symptoms are referred to the bladder as a rule, though bladder irritability is sometimes absent. Reflex symptoms, such as pain referred to the other kidney, are a frequent source of confusion. Dysuria is inconstant, polyuria being constant. Complete retention is rare: one more commonly sees a partial retention, due to the occurrence of pain provoked by the complete evacuation of an ulcerated bladder: a mild degree of incontinence is relatively common. Now and again, the diseased kidney may be felt to be enlarged, of increased density or consistence, and of reduced mobility (adhesion formation). Tenderness of the ureter on pressure is an unreliable sign. The most accurate diagnosis is afforded by analysis of the urine (quantity more or less normal, moderate albuminuria, presence of pus cells, and of red blood corpuscles). Pronounced hæmaturia is met with, as a rule, only in the early stages of the disease; minor hæmorrhages are the rule in cases of longer standing. Casper has been able to demonstrate T.B. in the

urine of over 80 per cent. of his cases. He lays special stress on the diagnostic value of guinea pig inoculation. The absence of bacteria from urine of patients suffering from apparent cystitis is suggestive of a tuberculous kidney lesion, even if T.B. cannot be demonstrated in the urine. If a guinea pig inoculation be negative on the first attempt, it should be repeated at least once. The Bright's kidney may allow of the passage of T.B. even though no active tubercular process is taking place in the kidney (Ausscheidungs tuberkulose, excretory bacilluria). A positive guinea pig inoculation, therefore, in association with obvious nephritic signs (presence of albumin and casts), does not necessarily mean a tuberculous kidney. To render such a diagnosis probable pus and blood cells must also be present in the urine. Tuberculin is of no diagnostic value. For localisation of the tuberculous focus it is important to remember that a primary bladder tuberculosis practically never occurs: the cystoscopic appearance of the ureteric orifices is of extreme diagnostic importance, and in ureteral catheterisation lies the surest diagnostic method.

Treatment.—A spontaneous cure has never occurred in Casper's experience: climatic, medicinal, radiological therapy may cause a temporary arrest of the process, the apparent improvement being often due to the conversion of an "open" into a "closed" pyonephrosis: tuberculin treatment is far from satisfactory: successful cure is only to be attained by nephrectomy. Severe bladder involvement is not a contra-indication to operation. The condition of the other kidney is of the utmost importance. In estimating its functional value Casper relies mainly on the following combination of tests: appearance of indigo-carmin within 5-8 minutes of injection of the pigment, according to the density of the urine: appearance of sugar within 15-18 minutes of injection of phloridzin: a freezing-point varying in direct ratio with the percentage of solids in the urine. The chief factor in the evaluation of these tests is experience, for an apparent diminution of function in the other kidney is often due to a toxic nephritis, which will clear up after removal of the tuberculous organ. Since the routine use of these combined tests was employed Casper has carried out 125 nephrectomies for tuberculosis, with only 7 deaths (5½ per cent.).

Nephrectomy is contra-indicated in bilateral tuberculosis. Should a co-existing bladder infection not clear up after nephrectomy ureterostomy is advised. Subcapsular nephrectomy is recommended in all difficult (adhesion) cases, the wound being left open and packed. To avoid fistulæ the ureteric stump is sealed over with perirenal fat; complete ureterectomy is condemned, and cauterization has proved unsuccessful in the author's experience.

WM. DOOLIN.

SURGERY OF THE AUTONOMIC NERVOUS SYSTEM.

LERICHE, R: *Causalgia Treated by Peri-arterial Sympathectomy.* "Presse Méd." April 20, 1916.

LERICHE and HEITZ: *Results of Peri-arterial Sympathectomy in Cases of "Reflex" Muscular Contracture.* "Lyon Chirurg." July and August, 1917.

LERICHE: *Treatment by Peri-arterial Sympathectomy of Certain Spontaneous Ulcerations in Amputation Stumps.* "Presse Med." Oct. 27, 1920.

HALSTEAD, W. S.: *Elevation of Temperature of the Hand and Forearm following Excision of a Sub-clavian Aneurysm and Ligations of the Left Sub-clavian and Axillary Arteries.* "Bull. of Johns Hopkins Hospital." July, 1920.

JONNESCO, T.: *Angina Pectoris cured by Resection of the Cervico-thoracic Sympathetic.* "Bull. de l'Académie de Méd." Oct. 5, 1920.

LERICHE appears to have opened a new field for surgery with his operation of peri-arterial sympathectomy. Believing that certain obscure conditions, such as causalgias, local ischemias, and reflex contractures of the Babinski-Froment type are due to sympathetic irritation producing vaso-motor phenomena, and especially vaso-constriction he performs the following operation:—The cellular sheath of the main artery in the affected limb is opened and separated from the artery for 8 or 10 centimetres. The inner sheath, lying directly upon the vessel wall, is incised and completely stripped off. Sometimes this can only be done piecemeal, and covering the artery with saline solution enables the operator to judge the extent of denudation. The collateral branches must not be torn. This decortication of the sympathetic sheath is followed immediately by a contraction of the denuded segment, sometimes to one-fourth of its normal size, giving place in from three to fifteen hours to vaso-dilatation accompanied by marked increase in the oscillations of the vessel walls recorded by Pachon's instrument, and by a rise of 2° C. or even 3° C. in the limb.

This reaction disappears gradually in the course of a month.

Leriche believes that his results explain the production of dry wounds of arteries, and throw light upon the real nature of causalgias, which are observed in lesions of nerves like the median, sciatic, and optic, which each have their companion

artery. Muscular contractures, too, of the Babinski-Froment type are possibly due to sympathetic irritation, shutting off the blood supply to the muscle and causing trophic changes in nails and skin. The author is temperate and critical in claiming success. Operating for causalgia in six cases, he had one complete failure and two complete successes. The other three cases were greatly improved, a notable result in an intractable condition. In five cases of trophic ulceration he succeeded five times. The reflex contractures proved less amenable; all were improved at first, but the majority tended to relapse as the vaso-dilator reaction subsided. Operation, therefore, was supplemented by paraffin baths at 60° C. to maintain dilatation. Finally, cases of ischemic paralysis following certain obliterative arterial lesions were relieved by resecting the obliterated segment. That is by performing complete sympathectomy.

In another paper Leriche advocates sympathectomy for certain peculiar cases of trophic ulceration, which have been described by Nové-Josserand. This appears apart from inflammation or scar tissue upon the skin of amputation stumps which are well innervated by peripheral nerves. These stumps are usually cold to the touch and are prone to become œdematous, giving the patient the sensation that the bone is too long. Remission of the symptoms is followed by relapse. Finally, a blister appears which leaves a dry slough covering an indolent ulcer. The stump is uncomfortable rather than painful. Hitherto these ulcers have not responded to treatment, and in some cases reamputation has been performed. Leriche, believing that the symptoms are due to sympathetic irritation causing vaso-motor disturbance, has resected the sympathetic sheath of the femoral artery in a case of amputation of the leg below the "site of election," which had ulcerated 54 days previously, and had shown no sign of healing. Three days after operation the condition was greatly improved and in 35 days cicatrisation was complete. Four months later the patient could walk 15 kilometres, using the artificial limb which he had discarded for a year previous to operation.

Halstead records the excision of a large left sub-clavian aneurysm. Some five hours after operation it was noticed that the left hand and forearm, which for two years had been strikingly cold, had become abnormally warm. About five weeks later the limb grew cold again, at first in small areas. Ten weeks after operation the back of the hand was cold, while the left palm was about as warm as the right. Halstead correlates these phenomena with those described by Leriche after sympathectomy.

Jonnesco describes a successful case of operation for true angina pectoris. Chronic aortitis is a frequent finding in the subjects of angina, and François Franck and others believe that

the pain associated with this condition has its origin in stimuli which arise in the aorta and are transmitted by afferent fibres of the sympathetic distributed to the heart and aorta. Franck, in 1899, suggested that resection of the cervico-thoracic sympathetic might relieve the pain of anginal attacks. Jonnesco, who was then convinced of the theoretical validity of these observations, had to wait sixteen years for an opportunity of putting them to the test. His patient presented typical attacks of angina pectoris and willingly accepted operation. The two lower cervical and first thoracic sympathetic ganglia on the left side were resected together with the trunk which united them. High spinal anæsthesia was used. The operation resulted, of course, in left sided enopthalmos, contraction of the pupil, and other signs of complete lesion of the cervical sympathetic. Owing to the German advance the patient was not seen for four years. At the end of this time examination showed that the acceleration of his very slow pulse rate, which followed operation, had persisted—it was now 72 to 74; he had no further attacks of angina. He admitted that he was still addicted to tobacco and alcohol, and said that circumstance forced him to lead a very arduous life. An x-ray of his aorta showed thick patches of atheroma, especially in its ascending portion. Jonnesco had originally intended to perform a bilateral resection of the sympathetic, but the man refused a second intervention in 1916, and Jonnesco now believes that the afferent stimuli which ultimately gave rise not only to the pain, but to the entire syndrome of angina pectoris, travel by the left sympathetic path.

He lays particular stress upon the removal of the first thoracic ganglion (which sometimes by coalescence is a cervico-thoracic ganglion), for he thinks that sudden death in angina pectoris may be due to spasm of the arteries to the brain-stem. The path of the vaso-constrictor impulse would appear to be by way of the sympathetic plexus surrounding the vertebral artery, and this path is interrupted by resection of the ganglion in question.

A. K. H.

OBITUARY.

COSGRAVE, ALEXANDER. Died November 3, 1920. Born 1851. Educated at Manchester; M.R.C.S. Eng., 1875; L.R.C.P.I., 1880; late Surgeon Major, 3rd East Lancs. Brigade R. Field Artillery, T. Died at Bolton.

HIME, THOMAS WHITESIDE. Died November 9, 1920. Born 1842. Educated at Trinity College, Dublin; Paris Heidelburgh and Munich; B.A., 1866; M.B., 1868; M.D., 1889, Dub.; L.R.C.S. Edin., 1868; late Medical Officer, Sheffield; late Lecturer on Midwifery and Diseases of Women and Children, Sheffield School of Medicine.

SWEETNAM, TOMES LONG. Died October 14, 1920. Born 1844. Educated Queen's College, Cork, and the Royal College of Surgeons, Ireland; M.D., M.Ch., 1869, R.U.I.; Fleet Surgeon, R.N., 1891; Deputy Inspector General, R.N., 1899. Died at Hove.

KNOTT, MIDDLETON O'MALLEY. Died November 7, 1920. Educated at the Richmond Hospital and the Carmichael School, Dublin; L.R.C.P. Edin., 1863; L.R.C.S.I., 1863; formerly Medical Officer of Northleach Union, Gloucestershire; Surgeon, Mayo County Infirmary, and Surgeon, H. M. Prison, Castlebar. Died at Castlebar.

MURRAY, HENRY BUCHANAN. Died November 19, 1920. Educated in Belfast, Dublin and Edinburgh; L.A.H., 1887. Died in Belfast.

ODLUM, WILLIAM HENRY. Died November 25, 1920. Born 1873. Educated at the Royal College of Surgeons, Ireland, and the Meath Hospital, Dublin; L.R.C.P. & S.I., 1898; Civil Surgeon, South African War; Queen's Medal with three Clasps, and King's Medal with two Clasps; Lieut., R.A.M.C., 1900, Capt., 1903; Capt., I.M.S., 1907, Major, 1914, Lieut.-Colonel. Died at the Meath Hospital as the result of a motor accident.

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